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STAN KAADY

Delta's IT TEST PILOT

Delta's new low-fare airline, called Song, has an impressive array of technologies for boosting customer service. Just as important, it serves as a testbed for new IT and productivity concepts that the parent company can use. **PAGE 37**

JOHN JACOBI (above), vice president of customer systems at Delta Technology, says all parts of Delta rallied to support start-up airline Song.

IT Leads Recovery After Regional Power Failure

Disaster recovery plans put to the test; users report resilient systems

BY LUCAS MEARIAN

When the power went out in Manhattan late Thursday afternoon, the stock markets had already closed. But the crucial trade-settlement system that uses thousands of batch-processing computers around New York City to clear billions of dollars in trades had just come to life.

Diesel generators at brokerage, bank and clearinghouse data centers around Manhattan and New Jersey kicked in, and IT departments said that they were far better prepared for what most called a simple power outage than they were on Sept. 11, 2001.

The New York Stock Exchange
Users, page 53

CIOs, experts cite urgent need for U.S. infrastructure upgrade

BY DAN VERTON

On the morning after last week's blackout, power company CIOs and utilities experts said similar or more catastrophic failures are possible if the industry and government fail to develop more modern control systems.

"It's not just bigger servers or better databases that we need," said Ali Jamshidi, vice president and CIO of First Energy Corp. in Akron, Ohio. "We just don't have the analytical tools that can do analysis on a real-time basis and that are predictive vs. reactive. Frankly, the tools that are available are just not robust enough."

Systems, page 53

FULL COVERAGE
For additional stories about the power outage, go to our Web site:
QuickLink a3550
www.computerworld.com

Patching Becoming a Major Resource Drain for Companies

Need to stay on top of threats such as Blaster poses burden to users

BY JAIKUMAR VIJAYAN

Last week's W32.Blaster worm, which affected thousands of computers worldwide running Windows operating systems, highlighted the enormous challenge companies face in keeping their systems up to date with patches for vulnerabilities, users said.

Companies that, ahead of Blaster's rampage, had installed Microsoft Corp.'s patch for a flaw identified last month said they felt no effect from the worm. But the seemingly constant work involved in guarding against such worms is becoming a burden that could prove unsustainable

over time, users said.

"The thing about patching is that it is so darn reactive. And that can kill you," said Dave Jahne, a senior security analyst at Phoenix-based Banner Health System, which runs 22 hospitals.

"You need to literally drop
Blaster, page 15

INSIDE
A security expert says Microsoft's Windows Update process has serious problems, and he's not alone. **PAGE 15**
Maryfran Johnson on 'Untrustworthy Computing.' **PAGE 20**
ONLINE
Federal agencies say they were unscathed by Blaster.
QuickLink 40636
www.computerworld.com

Users Mull On-Demand Model

BY PATRICK THIBODEAU
ATLANTA

Harold Weiss, a senior systems engineer at Baptist Memorial Health Care Corp. in Memphis, is convinced that utility computing can save him money. Storage demand for the network of 17 hospitals is increasing continuously and prompting capacity purchases

well in advance of need, he said.

With an on-demand model, "I could have everything in place, and when I need it, [the vendor] would turn it on," said Weiss. He said he believes this pay-as-you-go computing model could cut his storage costs by about 20%.

On-Demand, page 6

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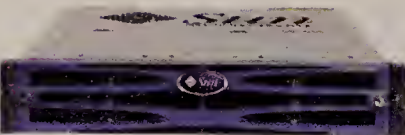
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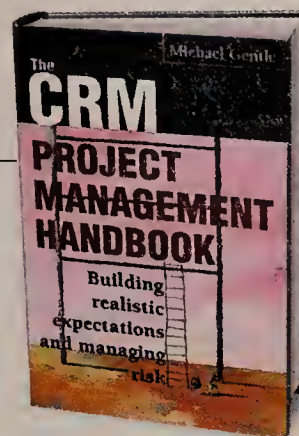
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*ULTRASPARC blades run Solaris 8 and 9, x86 blades run Solaris 9 for x86 and Red Hat Enterprise Linux once certified, Summer 2003.
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How to Plan Your Backup Strategy

STORAGE: Backups are probably the most essential component of any corporate network, and they are often done wrong. But it's not difficult to get your backup strategy right. **QuickLink 40585**

HIPAA vs. McDonald's: Food for Thought

SECURITY: Health care companies that want to avoid trouble over HIPAA compliance can learn from the infamous McDonald's hot-coffee lawsuit, says TruSecure Corp. attorney Marne E. Gordan. **QuickLink 40078**

Real-Time Feedback

DEVELOPMENT: Advice for managers on how to provide clear, specific and timely feedback to help people do their best. **QuickLink 40526**

StoreAge Relies on Out-of-Band Virtualization

STORAGE: Faced with an expanding list of competitors, StoreAge is counting on the technical prowess of its Storage Virtualization Manager, writes analyst Barb Goldworm in this vendor profile for SNW Online. **QuickLink 40570**

Hands on: A Close-up Look at Mac OS X's NetBoot

OPERATING SYSTEMS: IT professional Ryan Faas takes a look at how NetBoot can be used to start up client machines from a network disk image. **QuickLink 40606**

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BRIEFS

BMC Expands Linux Support

BMC Software Inc., which previously supported consumer-grade Linux distributions, last week announced that it now supports Red Hat Inc.'s Enterprise Linux 2.1 and SuSE Linux AG's Linux Enterprise Server 8 in several of its products, including Deployment Manager for Linux Version 1.2 and its SmartDBA database management tools.

CSC Earnings, Revenue Up in Q1

Computer Sciences Corp.'s (CSC) earnings and revenue grew in its first quarter, which ended July 4, thanks largely to strong sales to the U.S. federal government.

REVENUE			
Q1 2003	\$3.55B	UP	
Q1 2002	\$2.75B	29.1%	
NET INCOME			
Q1 2003	\$92.3M	UP	
Q1 2002	\$79M	16.8%	

Microsoft Ordered To Pay \$520M

A jury in Chicago last week ordered Microsoft Corp. to pay \$520.6 million in damages to Chicago-based Eolas Technologies Inc. and the University of California after finding that Microsoft's Web browser infringed on a patent. Eolas and the university accused Microsoft of improperly including technology in Internet Explorer that allows interactive content to be embedded in a Web site. Microsoft said it plans to appeal.

Survey: CIOs Have Bigger Workloads

20% of CIOs said their workload has increased significantly in the past 12 months

35% of CIOs said their workload has increased somewhat

BASE: Poll of more than 1,400 U.S. CIOs

MARK HALL ■ ON THE MARK

IT Salaries Are Soaring 12% to 15% a Year in ...

... Bangalore, India, which is making outsourcers there edgy about the country's longtime position as the low-cost leader for skilled workers. Parmeet Chaddha, senior vice president in charge of offshore operations at San Carlos, Calif.-based application service provider Corio Inc., worries that "the cost differential is shrinking" and that the Indian labor advantage will hold up for only another two to three years. Talking on his cell phone from a train rumbling into a New Delhi depot, he said companies that move IT operations offshore need to think

more strategically about the reasons for doing so, such as offering "follow the sun" tech support to users. Corio Executive Vice President John Ottman adds, "The basic game of moving labor hours offshore is simplistic and short term." ■ Brian Keane, CEO of Boston's venerable application outsourcer Keane Inc., thinks India's mix of low labor costs, a computer-savvy workforce, English-language skills and a friendly legal environment for business will continue to give the nation an advantage for the foreseeable future. That's why he does business there. Still, he says, "we are not making a country bet on India. We're already thinking ahead." Well, what's ahead? For Keane, South Africa and countries in the Middle East might be the next place for outsourcers to find smart, low-cost workers. That

would suit Rudain Arafeh just fine. Arafeh, CEO of Configure Inc., a San Jose-based WAN consultancy, thinks U.S. companies should be taking a closer look at Egypt, Jordan, Lebanon and elsewhere in the region for outsourcing work. Countries there have set up low-tax zones for foreign companies and have a surplus of trained, English-speaking technologists. But Arafeh believes that it's not only a

good business decision, it's smart global politics. "There are too many mostly well-educated young men with nothing to do over there. The byproduct of giving them jobs is to help the region," he argues. It's doubtful that any American CEO will take up this "U.S. IT unemployment for peace" cause. They'll do it just to save the bucks. But you never know. ■ With the world competing for cushy

U.S. IT jobs, you'd think that low-cost labor was your biggest concern. It's not. Computers are. **Task automation is a bigger threat to IT jobs.** Corio's Ottman says, "We want to automate labor out of the equation as much as possible." A competing ASP, Surebridge Inc. in Lexington, Mass., has an internal program called Project 55 with the goal of running applications 55% less expensively than companies could do themselves. While offshore labor savings are part of the difference, automation can make a bigger difference. According to CIO Mark Clayman, "We need to get policies and procedures in place to make every task automated." It's not too late to learn how to make lattes and cafe mochas. ■ Or maybe you should just go to a smaller company. Laurence Bunin, CEO of Handshake Dynamics LLC, a New York-based management advisory firm, says, "The big trend in the midmarket is a dramatic shift to insourcing." He says a number of \$100 million to \$1 billion companies found that the headaches and costs of managing outsourced projects sucked out all the savings from cheap Indian labor. Corio's Chaddha points out that any deal with an Indian outsourcer needs to add back 15% to 25% of U.S. labor wage rates just to manage the complexity of the agreement. For a large company or an ASP that can spread the costs over many users, the management overhead isn't as big a burden. But for midsize companies, it's a pain. As a result, says Bunin, his clients are bringing their applications back in-house. And cost isn't the only reason. For midsize companies, information management can be one of the biggest competitive advantages, as their application needs are highly specialized. That means offshore outsourcers are best used for commodity operations. Well, there's a little light in the long, dark unemployment tunnel. ▀

Business Monitoring

BMC Software Inc. in Houston releases this week its BMC Service Impact Manager (BSIM) and BMC Event Manager (BEM), which monitor how IT operations and performance directly affect discrete business operations. The software models a company's business processes and alerts interested users and IT staff when the metrics for those processes change. BSIM starts at \$80,000, and BEM at \$50,000.

Dollar Rent A Car Project Frees Staff for Web Work

BY TODD R. WEISS

In a move aimed at freeing up its IT workers, Dollar Rent A Car Inc. will enable its marketing department to make on-the-fly changes to its car rental Web site with new content management software from Percussion Software Inc.

Peter Osbourne, group manager of Internet and data warehousing at Tulsa, Okla.-based Dollar Thrifty Automotive Group Inc., the parent

company of Dollar, said this is the first time that the Web site will include content management software intended to make updates easier.

"It really allows my [IT] team to focus on pure development from the technical side," Osbourne said, referring to the deployment of Stoneham, Mass.-based Percussion's Rhythmyx 5 Enterprise Content Management software.

Previously, when Web site

changes were needed, an IT staffer got the job, taking him away from development work. Now marketing staffers will be able to add rental promotions and other pertinent information for vehicle rental customers to keep the site updated.

Key benefits of the Rhythmyx 5 application are that nontechnical people can use it to make site changes and that images can be reused easily from one Web page to another, Coniglio said. When an image is changed on one Web page, it's changed automatically on all the other pages using it, saving time and effort

on site construction.

Another benefit is that the software is priced at about one-third the cost of competing products, Coniglio said, though he declined to name other products Dollar considered or how much it paid. But according to Percussion, pricing begins at \$250,000 for a typical enterprise content management project.

Dollar's deployment of the content management system began early this month and will be completed next month, Osbourne said. The company will run the application on Windows 2000 Server. ▀



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Electronic Retailers Hurt by Spam Flood

Mailings that customers opt to receive are being blocked or going unread

BY CAROL SLIWA
BOSTON

A NEW YORK-BASED online jewelry retailer blasted an e-mail to customers with the subject line "Hot Summer Styles." Even though the intended recipients had asked to receive mailings from the company, some 300,000 of them never saw it.

The word *hot* apparently triggered filters that blocked the message from being delivered, said Pinny Gniwisch, a founder of Ice.com. "The filters are not smart," he lamented.

Many electronic retailers at last week's eTail 2003 confer-

ence here complained that they're suffering from an anti-spam backlash even though they said they have opt-in mail policies and don't spam anyone.

Several electronic retailers said that in the past six months, they've found their marketing messages being increasingly blocked or filtered, or simply going unread by customers who are inundated with so much unwanted e-mail that they're starting to tune out even legitimate communications.

"This is the big battleground — getting your mail through," said Daniel Gudema,

e-commerce strategist at ABC Distributing LLC in North Miami. "Maybe e-mail will become obsolete as a marketing tool."

Some retailers claim that they're starting to see the harmful effects in their general ledgers. Online retailer eBags sends out about 8 million electronic messages per month to customers who opt to receive its mailings, according to CEO Jon Nordmark. A year ago, 22% of the recipients made purchases as a direct result of those messages. Now the conversion percentage is 13.2%.

Nordmark said the Greenwood Village, Colo., retailer hit profitability last year and has seen overall revenue grow 90%. But e-mail is no longer the primary growth driver.

It now ranks behind affiliate marketing, off-line catalogs and search technology on the priority list, he said.

Mike Frazzini, vice president of technology at eBags, is convinced spam is to blame. He estimated that at least 30% of the company's e-mail is being blocked or filtered, although he acknowledged that it's tough to quantify. He said a company often doesn't know if its mail is being blocked at the server by an Internet service provider or a corporation, or on the client side with filters set up by individual users.

Frazzini said the company is working to make sure its domain isn't turning up on any of the black lists that antispam groups, such as Mail Abuse Prevention System LLC, have established to help companies set up spam filters. He said corporations and Internet service providers sometimes use those lists to set up server-based filters.

Matthew Berk, an analyst at Jupiter Research in New York, advises retailers to outsource

Marketing Tips

Consider a third-party mail provider.

Avoid using the catchphrases of true spammers in subject lines.

Send only permission-based mail customers will find valuable.

Encourage customers to add your company to their address books or to set their filters to accept your mail.

Refresh your mailing list to make sure customers are still interested in receiving content.

bulk mailings to third parties that stay on top of issues involving spam. Those providers include CheetahMail Inc., DoubleClick Inc., Digital Impact Inc. and Responsys Inc.

In addition, Berk said retailers would be wise to stop using the same sorts of phrases that true spammers insert into the subject lines of their messages, such as "act now," "free" and "one-time opportunity." Exclamation points are another no-no, he said.

"If it sounds like spam," Berk warned, "it is spam."

Paying Attention

Many companies now do more extensive monitoring of the open, click-through and conversion rates to gain greater insight into their e-mail efforts.

Tower Records, a Digital Impact customer, has found in the past six months that its e-mail open rates have dipped lower than they've ever been, according to Kevin Ertell, senior vice president of online operations. Ertell said he suspects that mail is getting lost in the spam shuffle.

"If the overwhelming problem isn't solved, it won't really matter what content we put in the e-mail because people aren't seeing it," Ertell said.

Ertell, like some other retailers, said he would support legislation to help curb the problem. "We have to do something about it," he said. "It's gone beyond annoying. It's negatively affecting people's business operations." ▀

Navy Taps Securify to Manage Legacy Apps Risk

Contract aimed at integrating old apps with N/MCI

BY DAN VERTON

The U.S. Navy has awarded a \$5.8 million contract that's designed to help the service tackle one of its most pressing security challenges: integrating thousands of legacy applications into its multibillion-dollar Navy/Marine Corps Intranet (N/MCI) program.

The two-year deal with Mountain View, Calif.-based Securify Inc., announced last week, will give the Navy unlimited use of Securify's SecurVantage security management product. The goal is to ensure that all of the Navy's networks comply with the more robust security policies established by the N/MCI

contract [QuickLink 39348].

The Navy in 2000 awarded the \$6.9 billion N/MCI contract to Plano, Texas-based Electronic Data Systems Corp. Among the challenges that have at times threatened the project's success has been the existence of tens of thousands of applications that, if moved into the intranet, would expose security vulnerabilities.

Of 30,000 legacy applications, 12,000 have been either approved outright or approved with restrictions to operate in the N/MCI environment. The Navy hopes to get the total number of applications it uses down to 5,000 within several months, according to Capt. Chris Christopher, staff director at the N/MCI program office.

Deploying the Securify product will help the Navy

more quickly integrate existing applications, the majority of which still sit on servers located outside of the N/MCI, Christopher said. Starting Oct. 1, all new applications deployed by Navy units must comply with stringent N/MCI security requirements.

"That's going to be a challenge," said Christopher. "There's probably going to be

a lot of waivers put in to try to move the process along."

Steve Vetter, director of strategic planning for the N/MCI program at EDS, said the key issue facing the Navy — and the driving factor behind the decision to purchase the Securify product — is the need to have enough information about the security of various networks and applications so that good decisions can be made about which applications to allow inside the N/MCI environment.

For now, the Navy is preparing to deploy 65 enterprise SecurVantage monitoring points, said Carl Wright, vice president of federal operations at Securify.

"Most government organizations today really don't understand what their [current] IT environment is like," said Wright. "As they moved during the last two years from mainframe to distributed client/server architectures, they really lost control of that information architecture." ▀

PRODUCT FEATURES

SecurVantage Enterprise Monitoring Point

- Rack-mounted PC appliance
- 1-GHz Pentium III
- 1GB memory
- Three 9GB hard drives

SecurVantage Enterprise Manager

- Dell PowerEdge 1650 server with 1.4-GHz Pentium III
- 1GB SDRAM
- Two 18GB SCSI hard drives
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Vendors to Combine Disk Arrays and Tape Libraries

Move improves backup and restore capabilities, aids regulatory compliance

BY LUCAS MEARIAN

IN THE WAKE OF new government regulations requiring better corporate record-keeping, three top tape library vendors have confirmed that they're working to combine inexpensive disk arrays with their libraries to bolster backup reliability and data restoration.

Advanced Digital Information Corp. (ADIC), Storage Technology Corp. and Spectra Logic Corp. are each developing products that would use Serial Advanced Technology Attachment disk arrays physically and logically tied to tape libraries to consolidate storage management, speed backups, increase redundancy and guarantee the fast restoration of mission-critical data.

Jonathan Otis, ADIC's senior vice president of technology, said RAID adds reliability to his company's libraries because "you can lose a disk drive and the backup will continue, while with tape drives, if a drive goes down, it will stop the process, and you'll have to start it all over again on another drive."

ADIC said its combination disk/tape library will be available this fall. Spectra Logic said its model will be available early next year.

Louisville, Colo.-based StorageTek wouldn't say when its product will be available, but company officials said the technology is part of an overall information life-cycle management initiative focused on

storing data on varying forms of media. The goal is to align cost, reliability and speed of recovery with the importance of the data.

"The next logical step for our partners and customers is doing tighter integration of components with not just disk to tape, but [with] networking and management tools," said Tom Balue, manager of product marketing for StorageTek's Automated Tape Solutions division.

Balue said one of the biggest advantages of a disk/tape library combination is that systems administrators can back up different data sets to disk

and tape from a single console, without having to learn multiple backup applications.

"What's the advantage of disk over tape? If you lose a tape, you're in trouble, but if you're using inexpensive disk in a RAID, the data isn't lost," said Matt Starr, chief technology officer at Boulder, Colo.-based Spectra Logic, referring to an array's ability to rebuild data striped across multiple disks after a single drive fails.

Consolidate Power

Another advantage of combining disk arrays with tape libraries is that administrators could combine power sources and cooling systems, Starr said.

Rick Luttrall, director of product marketing for the Nearline Storage division of leading tape vendor Hewlett-

Why combine disk and tape?

■ Faster and more reliable backups

■ Faster restoration of data

■ Easier integration of management tools

■ Consolidation of power and cooling systems

■ Takes less room in the data center

Packard Co., said HP is considering physically combining disk and tape. But he emphasized that addressing a policy-driven information life-cycle management strategy that includes intelligent software is far more important.

Gary Pilafas, senior storage and systems architect at UAL Loyalty Services Inc., a unit of United Air Lines Inc., said that "in a world where we're keeping our backups longer," disk and tape combinations have merit.

Pilafas currently uses two StorageTek L700e libraries to archive data but plans to upgrade to Fibre Channel drives so he can include the libraries in a storage-area network. Disk acting as cache for Pilafas' library would allow UAL Loyalty Services to restore data faster.

"I think that's what a lot of end users are thinking: For backup, let's just use disk. If StorageTek said you can back up to disk and dump to tape to meet all the federal regulations... then you've met a whole lot of requirements" Pilafas said.

Because disk arrays help ensure that data is backed up, they can help companies meet federal regulations such as the Sarbanes-Oxley Act, which requires that e-mail be retained and retrievable. ▀

HP, Hitachi to Offer Disaster Recovery Services

BY LUCAS MEARIAN

Hewlett-Packard Co. said last week that it has extended a multibillion-dollar OEM agreement with Hitachi Data Systems Corp. to continue offering Hitachi's high-end Freedom Storage Lightning 9900 series array under the StorageWorks XP brand. The two vendors also agreed to jointly provide disaster recovery and business continuity systems and services.

HP extended the OEM agreement through 2008. The partnership with Santa Clara, Calif.-based Hitachi had been set to expire in 2005.

Bob Schultz, senior vice president of HP's Network Storage Solutions division, wouldn't say how much the OEM agreement is worth but said it will bolster a larger services strategy.

Hitachi's Lightning 9900 features an internal switched-

bus architecture that supplies bandwidth of up to 6.4GB/sec. and capacity of up to 147TB. HP loads its own management software onto the array. Both companies plan to use the Lightning array as the centerpiece of the disaster recovery and business continuity system they offer. That system will synchronously replicate between a primary and sec-

ondary site less than 60 miles apart and asynchronously replicate to a third array thousands of miles away.

The HP StorageWorks Multi-Site Disaster Tolerant Solution combines HP's software, hardware, networking and services with Hitachi's array to allow users to recover application processing in less than one hour if a local or regional disaster occurs, Schultz said.

One Relationship

For Steve Strout, CIO of Morris Communications Corp. in Augusta, Ga., the services partnership between HP and Hitachi will speed the implementation of a disaster recovery system he plans to have in place by October for backing up his SAP and Microsoft Exchange application servers.

Strout said one of the biggest benefits from the partnership is the ability to get the

high-end Hitachi array without having to configure or download the HP replication software.

"I want to have one relationship," he said. "This allows them to do system-to-system backups without me having to do a lot of systems administration. This provided me a much better and faster implementation."

Strout has so far purchased two StorageWorks XP arrays, each with 7TB of capacity, for business continuity. He plans on mirroring data between data centers in Augusta and Atlanta. Strout said he will eventually purchase a third array for longer-distance disaster recovery.

Schultz said a three-site disaster recovery system will cost on average between \$1.5 million and \$3 million, depending on how the arrays and networks are configured. ▀

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BRIEFS

MCI Names AT&T
Exec President, COO

After weeks of responding to allegations of wrongdoing by chief competitor AT&T Corp., MCI (which is still legally known as WorldCom Inc.) last week announced the appointment of Richard R. Roscitt, a former AT&T executive, as its president and chief operating officer, reporting to CEO Michael Capellas. Roscitt was previously president of AT&T Business Services and president and CEO of AT&T Solutions.

HP Buys .Net
Consulting Firm

Hewlett-Packard Co. last week said it has agreed to buy a consulting company that specializes in designing and implementing systems and applications based on Microsoft Corp.'s .Net architecture for Web services. Atlanta-based Extreme Logic Inc. will become a wholly owned subsidiary operating as part of HP's services division. Financial terms weren't disclosed.

Sun to Replace
Entry-Level Server

Sun Microsystems Inc. last week said it will replace its entry-level Intel Pentium III-based server with Intel Xeon-based systems in mid-October. The Sun Fire V60x and V65x servers will fill the low-end spot in Sun's x86 product line and run Solaris or Linux.

New Protocol Helps
Boost Wi-Fi Sales

The market for 802.11, or Wi-Fi, wireless LAN equipment grew in the second quarter, driven in part by users embracing the recently standardized 802.11g technology, said Dell'Oro Group Inc. in Redwood City, Calif. Worldwide Wi-Fi unit shipments grew 6% from the first quarter, but falling prices limited revenue growth to 2%, Dell'Oro said.

Retailer Boosts Efficiency of
Linux Virtual Server Project

Department store chain saves money on hardware, IT staff using Levanta 2.0

BY TODD R. WEISS

WITH A shrinking IT staff and a flat IT budget, Boscov's Department Store needed a way to increase the efficiency of deploying Linux virtual servers on its underutilized IBM zSeries mainframe.

After first trying to set up the virtual servers himself, programmer Rob Schwartz found that by installing a copy of SuSE Linux AG's Linux on each virtual server on the mainframe, he was wasting large amounts of memory and disk space. He determined that using read-only file sharing would solve the problems, but setting up such a system would be difficult to do on his own.

That's the scenario behind Boscov's deployment of Linuxcare Inc.'s Levanta 2.0, which was introduced at the recent LinuxWorld conference in San Francisco.

Joe Poole, technical support manager at Reading, Pa.-based Boscov's, said he had heard about Levanta at an IT conference two years ago. Poole said that at the time, the first-generation Levanta offering was the only product he found that could help him. "They were building something, and I saw value in it" and volunteered to become a beta tester, he said.

Using Levanta, Boscov's was able to set up about two-dozen virtual Linux servers, while sharing binaries and executables, Schwartz said. The virtual servers are replacing a host of Windows NT servers, including 11 production systems and 10 test systems.

Although he declined to provide a dollar figure, Poole said the regional department store chain has saved money on hardware and IT staff by using Levanta. "To bring in new server instances [as

they're needed] costs no more money, once you have this equipment," he said.

Schwartz is managing the company's Linux environment on his own.

In addition, Levanta allows Schwartz to configure the Linux instances with specific rights for other IT workers at Boscov's so they can perform their work without having full access to the mainframe, said Poole. "It gives [Schwartz]

control to give control to others," he said.

Pricing for San Francisco-based Linuxcare's Levanta 2.0 for a z/900 mainframe begins at \$100,000 per Integrated Facility for Linux. The application can run Red Hat Inc.'s Linux 7.2 or SuSE Linux Enterprise Server operating systems for the virtual servers.

Levanta runs on the mainframe's IBM z/VM operating system, making it possible for IT workers with little z/VM expertise to quickly configure and run the virtual Linux

Group Releases Set of Guidelines for
Building Interoperable Web ServicesVendors expected
to support Basic
Profile in products

BY CAROL SLIWA

Users concerned about being able to build interoperable Web services got an encouraging sign last week when an industry group released a long-awaited set of guidelines that vendors are expected to support in products.

The Web Services Interoperability Organization (WS-I), whose 170 members include vendors and user companies,

announced the availability of its Basic Profile 1.0 guidelines, which detail how a set of core Web services specifications should be used to build interoperable Web services.

In developing the Basic Profile, the WS-I addressed about 200 problematic issues related to the specifications and their interoperability, said Steven VanRoekel, director of Web services at Microsoft Corp.

The WS-I has also pledged to release test tools that can be used to check if an application is compliant with the Basic Profile. Test tools are due this fall for both the Java and C# development environments.

Sample applications are also scheduled to be made available to provide developers design, implementation, test and deployment scenarios in various business situations on 10 different platforms.

The Basic Profile guidelines are intended for vendors, large corporations and industry consortia developing software and tools that can be used to write Web services, said Jason Bloomberg, an analyst at Zap-Think LLC in Waltham, Mass.

"A lot of the gray areas with the basic Web services standards are now resolved, and we can move on to the more challenging areas: security, management, reliability and transactions," Bloomberg said.

The WS-I is continuing work on Version 1.1 of the Basic Profile, which will add support for attachments in SOAP-based messages, and on the Basic Security Profile.

But it remains unclear what the WS-I's plans are for SOAP 1.2, according to VanRoekel. The new version of SOAP, which the World Wide Web Consortium finalized in June, brings substantial improvements over the 1.1 edition that became the de facto standard among vendors.

Tom Glover, chairman of the WS-I, has said that the group will consider incorporating SOAP 1.2 into a future version of the Basic Profile.

The WS-I's membership includes major vendors such as Hewlett-Packard Co., IBM, Microsoft and Oracle Corp. and enterprise users such as Charles Schwab & Co. and Merrill Lynch & Co. ▀

NEW PRODUCT

Levanta 2.0 on
the IBM zSeries
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■ Supports Red Hat Linux 7.2 and SuSE Linux Enterprise Server operating systems.

Windows Update Patch Process Faulty, Expert Says

Claims flaw fools users into thinking that their systems have been patched properly

BY JAIKUMAR VIJAYAN

Microsoft Corp.'s Windows Update patch management program has a critical shortcoming that, in some cases, could fool users into thinking they have been properly patched against some vulnerabilities when in fact they have not, a security expert said last week.

The claim, made by Russ Cooper, moderator of the popular NTBugtraq mailing list and an analyst at Reston, Va.-based TruSecure Corp., was strongly refuted by Microsoft as being unfounded.

According to Cooper, the problem lies in the manner in which the Windows Update program verifies whether a system has a particular patch.

Windows Update relies only

on the "registry key" information associated with each patch to determine if a system has a specific patch, Cooper said.

When a user goes to the Windows Update site, a program first scans the user's system for the registry keys to determine what patches are installed on the system.

The problem is that a system may have the registry keys associated with a particular patch, even though the patch itself may not be installed. This can happen, for instance, if a machine crashes or is turned off during the patch installation process or because of insufficient system resources to install a patch, according to Cooper.

In such cases, Windows Up-

date is fooled into thinking the system is patched because all it's using to verify the existence of a patch is the associated registry-key information, Cooper said. It's for this reason that other patch management products look for patch-specific file information in addition to registry-key information when verifying the existence of a patch, he said.

On the Defensive

Stephen Toulouse, a security program manager at Microsoft, dismissed Cooper's claims and insisted that Windows Update has "for several months" been checking for file versions in addition to registry keys when scanning for patches.

Citing the patch for the latest Windows remote procedure call vulnerability (MS03-026), Toulouse said there have been "tens of millions of successful implementations of this patch, and we haven't

heard of a situation where customers think they have installed the patch and then find out they haven't."

Toulouse added that the method Cooper used to demonstrate the problem was a highly unlikely and "artificial" scenario.

"It is entirely possible to try and make something fail," Toulouse said. "The question is, how realistic is the scenario?"

Windows Update is checking file versions for the latest patch relating to the Windows vulnerability that Blaster took advantage of, Cooper said. But the same isn't true for all patches, he claimed.

"There are many other serious security vulnerabilities that are addressed by other Microsoft patches that can be spoofed by simply writing a registry value," according to one security expert, who requested anonymity.

As of Aug. 13, patches for at least three critical vulnerabilities announced this year could be spoofed using registry keys, according to the source.

At least one user has given up on Windows Update altogether. Vivek Kundra, director

Blaster to Target Windows Update

■ A distributed denial-of-service attack against Microsoft's Windows Update site may start on Aug. 16.

■ The attack could cause Internet disruptions beginning that day.

■ Starting Jan. 1, 2004, the worm will switch to cyclic behavior in which it attacks the Microsoft site from the 16th of each month to the end of the month. On the remaining days, it will scan for other vulnerable systems.

SOURCE: DEPARTMENT OF HOMELAND SECURITY

of infrastructure technologies for Arlington County, Va., last week said his department had problems using the Windows Update server technology to deploy the patches.

Although the county government began the process using Microsoft's Windows Update process, it had to abandon the approach because the patches didn't always deploy properly on the county's 3,500 workstations. As a result, it switched to Novell Inc.'s ZENworks to distribute the patches, Kundra said. ▀

Continued from page 1

Blaster

everything else to go take care of [patching]. And the reality is, we only have a finite amount of resources" to do that, Jahne said.

Banner had to patch more than 500 servers and 8,000 workstations to protect itself against the vulnerability that Blaster exploited. "I can tell you, it's been one heck of an effort on a lot of people's part to do that," Jahne added.

For the longer term, Banner is studying the feasibility of partitioning its networks in order to minimize the effect of vulnerabilities, he said.

Adding to the patching problem is the fact that companies, especially larger and more distributed ones, need time to properly test each patch before they can deploy

it, said Art Manion, an Internet security consultant at the CERT Coordination Center at Carnegie Mellon University in Pittsburgh.

That's because patches haven't always worked or have broken the applications they were meant to protect, said Marc Willebeek-LeMair, chief technology officer at Tipping-Point Technologies Inc., an Austin-based vendor of intrusion-prevention products.

Companies also need to schedule downtime in advance to deploy such patches, said Kevin Ott, vice president of technology at Terra Nova Trading LLC, a Chicago-based financial services firm.

"We work in a 24-by-7 environment, so there is a limited scope for downtime" in which to deploy patches, he said.

But the stunning quickness at which Blaster exploited Windows' remote procedure

call vulnerability is a sign that companies are going to have to respond to new threats even faster than they do today, said Chuck Adams, chief security officer at NetSolve Inc., an IT services company in Austin.

Although worms such as SQL Slammer didn't appear until eight months after the

“[Three or four days] is not going to work any longer. I need something that can cut the process down to a few hours, if not minutes.”

VIVEK KUNDRA, DIRECTOR OF INFRASTRUCTURE TECHNOLOGIES, ARLINGTON COUNTY, VA.

vulnerability was announced, Blaster was released in just one month, Adams said.

That means companies will need to somehow find ways to lessen the time it takes to test and deploy patches, said Vivek Kundra, director of infrastructure technologies for Arlington County, Va. Currently, Arlington County needs about three or four days to push out patches across its networks.

"[Three or four days] is not going to work any longer," Kundra said. "I need something that can cut the process down to a few hours, if not minutes."

The county is looking at outsourcing its patch management process to a third party. Also under consideration is a plan to adopt a more automated process for testing and deploying software patches, Kundra said.

"Sometimes [patching] can

be more an art than a science," said Hugh McArthur, information systems security officer at Online Resources Corp., a McLean, Va.-based application service provider for more than 500 financial institutions.

"There will be times when you may need to make a judgment call balancing risk, appropriate testing [and] mitigating factors," he said.

Even so, patching remains the best available option, according to Bruce Blitch, CIO at Tessengerlo Kerle Inc., a multinational chemical company with U.S. headquarters in Phoenix.

"Everyone would no doubt agree that having completely error- and exploit-proof code would be the most desirable situation," Blitch said. In the absence of that, he said, "we're convinced that [patching] is the best strategy." ▀

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Mohegan Sun Puts Its Chips on Customer Retention Technology

Casino evaluates funds transfer and blackjack surveillance systems

BY THOMAS HOFFMAN
UNCASVILLE, CONN.

The Mohegan Sun casino next month plans to begin testing two technologies that officials at the gaming resort hope will help lower costs and improve its customer retention rates and profit margins.

In one project, Mohegan Sun will install automated funds transfer (AFT) technology on 300 to 400 of the high-roller slot machines in its two casinos here. The technology is based on software from Advanced Casino Systems Corp. in Egg Harbor Township, N.J., and will let slots players establish credit with the casino and then use magnetic cards to download all or part of those funds into a slot machine.

The second test involves a video surveillance and data-collection system that will be installed at 10 of Mohegan Sun's 130 blackjack tables. Black-

jack players will be able to swipe their casino cards through readers built into chair armrests, and the system will track the size and frequency of their bets and integrate the data into a player rating system that runs on an IBM AS/400 server.

Mohegan Sun expects several benefits from the AFT system, CIO Daniel Garrow said this month in an interview. Currently, if a slots player wins a jackpot of more than \$1,200, the machine locks up while he is asked to fill out a form for the Internal Revenue Service. But with the AFT technology, "we can allow the player to keep playing, since they're not withdrawing the funds right away," he said.

Patricia Wright, an analyst at Fitch Ratings Ltd. in New York, said casinos that have installed so-called ticket-in, ticket-out technologies have realized "good savings, since there's less downtime on slot machines because they

don't have to refill them constantly."

The blackjack-table monitoring system that Mohegan Sun plans to test was developed by MindPlay LLC in Bellevue, Wash. Pattern-recognition algorithms analyze betting images captured by video cameras to determine chip denominations and gamblers' wager amounts, said MindPlay. The data

collected from the table is sent to a MindPlay server and can be integrated with a casino's player rating system.

The monitoring system will not only help Mohegan Sun root out players who are counting cards but also help it generate more accurate player ratings than its current approach, which relies on pit managers, Garrow said. More accurate ratings could prevent Mohegan Sun from ex-

tending more credit to high rollers than it needs to, thus saving the casino money, he added.

If the casino decides to roll out MindPlay's system at all of its blackjack tables, the total cost could be about \$3 million, Garrow said. But Wright said that similar table-surveillance systems are among the hottest technologies casinos are deploying. ▀



DANIEL GARROW says Mohegan Sun will provide better customer service with its AFT system.

Soviet Skills Draw R&D Work

BY PATRICK THIBODEAU

The U.S. IT industry is tapping into the technological prowess of the former Soviet Union, which is emerging as a research and development center for software and telecommunications companies, a recent report by Aberdeen Group Inc. has found.

But the region's software development skills, which can be accessed at a cost well below U.S. rates, is also appealing to managers of non-IT firms. Craig Maccubbin, vice president of technology at online travel service LasVegas.com, is one of them.

"Many [Russian developers] are ex-Soviet military technologists and programmers, and because of that, they have had classical training in software development," he said. "They are so disciplined that there is almost a level of inflexibility to their approach." But, Maccubbin added, that level of discipline also "helps the process of working with them immensely."

Boston-based Aberdeen found that IT vendors are Russia's largest offshore contingent, accounting for about three-fourths of all the offshore work

done there, said analyst Stephen Lane, who wrote the report.

IT companies are setting up development centers in Russia to help build a market there and to utilize Russian talent for high-end development.

"What they do have is a culture that is focused on problem-solving and focused on using technology in an innovative fashion," Lane said. But "there is not a Russian company out there that can compete with an Indian company in terms of scale or scope," he added.

Maccubbin uses Epam Systems Inc., a services provider in Princeton, N.J., that has operations in Moscow and Minsk, Belarus. He said he relies on the development workers in Minsk to build and maintain most of the Web site's back-end functions. But the customer-facing aspects, such as graphic design work and other "defining characteristics," are handled in the U.S. "You can't outsource that to anybody," he said. Developers in the U.S. charge about \$38 per hour, while the Russian per-hour rate is up to \$20 less, he added.

Bob Pryor, who heads Cap Gemini Ernst & Young's outsourcing services in New York, agreed that Russia's workers have advanced technological skills. However, he said, the country will remain a small part of the offshore outsourcing market because its government isn't developing the industry. "I don't see any significant investment for new skills and capabilities," he said.

Marc Herbet, executive vice president of Sierra Atlantic Inc., an application management company in Fremont, Calif., that runs an offshore center in India, said Russia may well take off as an offshore outsourcing center if Europeans begin embracing offshore work, particularly because of the proximity. ▀

Russia Resources

PROS

- Low cost
- Disciplined, skilled developers
- Focus on innovative problem-solving
- Talent for high-end development

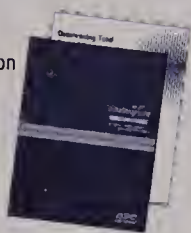
CONS

- Inflexible culture
- Lack of government investment

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by Russell Senesac
InfraStruXure Product Manager

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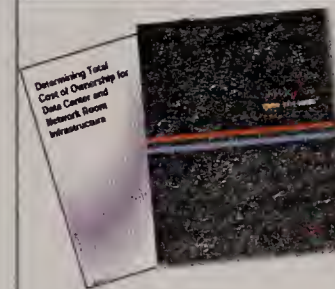
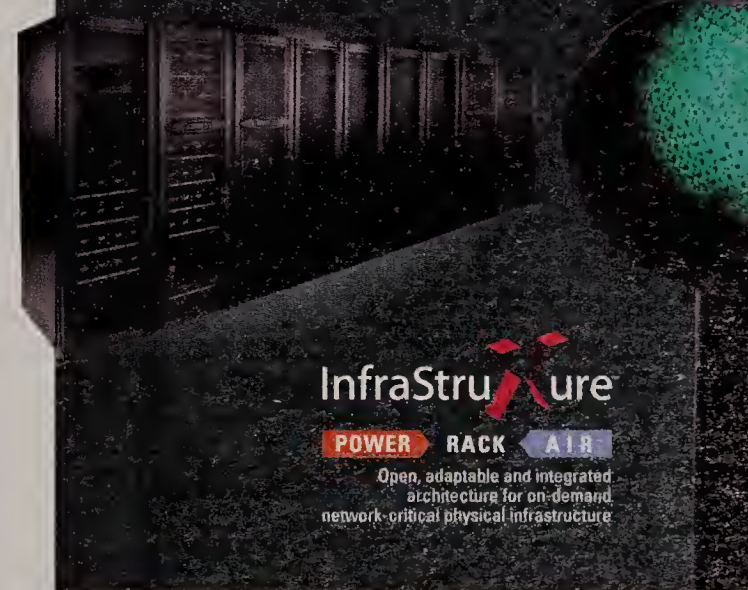
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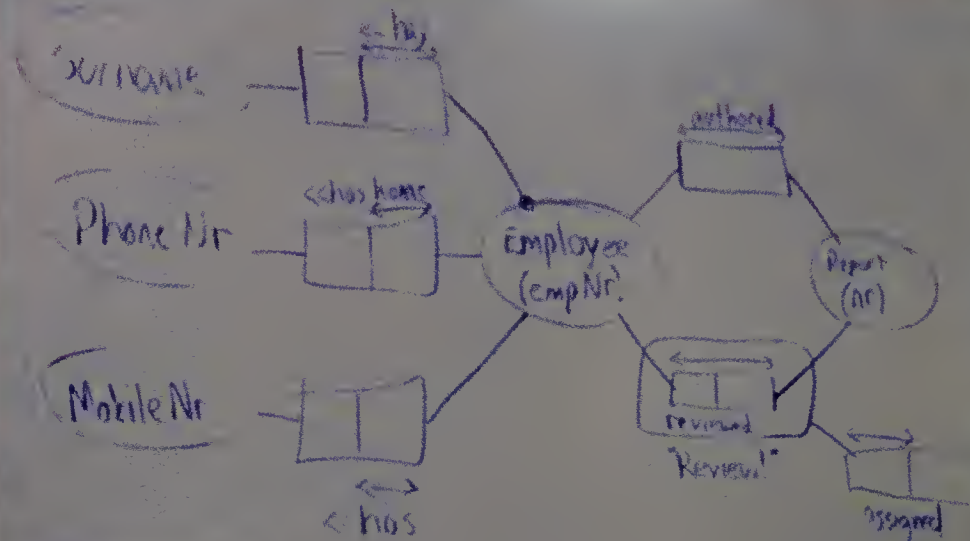
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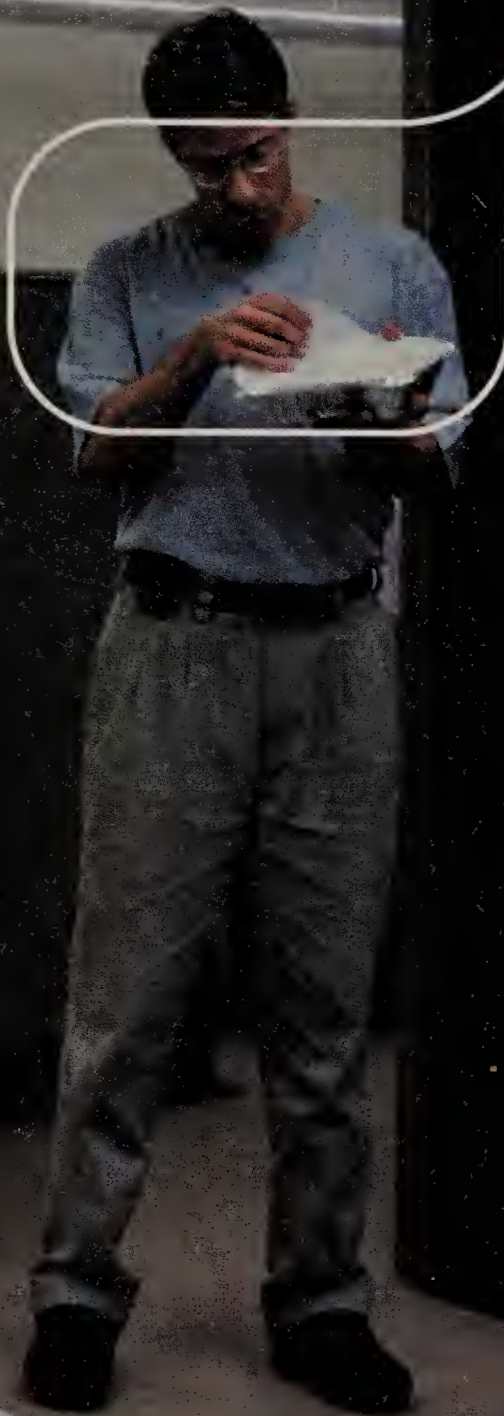


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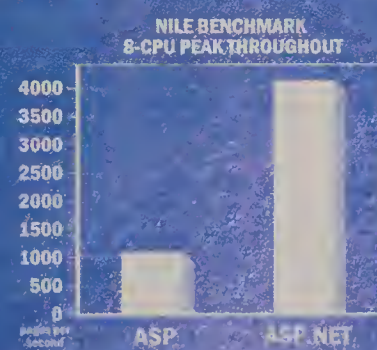
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MARYFRAN JOHNSON

Untrustworthy Computing

WE ALL KNEW IT was coming, didn't we? There was no surprise when the Blaster worm began its Internet rampage last week.

This latest crippling attack was launched against yet another security hole in Windows. We were warned a month ago, remember? Right around the time Microsoft was giddily signing a \$90 million enterprise software deal with the U.S. Department of Homeland Security (oh, the irony), it was solemnly warning that three serious new flaws had been discovered in Windows.

One of those babies was destined to be exploited by the now-infamous Blaster (a.k.a. Lovsan), a pernicious self-propagating worm that has infected more than 100,000 systems worldwide. Homes and businesses alike have been hit, their computers repeatedly shutting down. The wave of massive inconvenience and frustration has gotten TV, radio and newspaper coverage everywhere. Another black eye — not just for Microsoft, but for the technology industry, too. When it's not spam clogging your e-mail, it's a barrage of viruses and worms disabling your PC.

The cure was almost as bad as the disease. Updated virus protection definitions (a bit sluggish in making their appearance from the major security vendors) had to be downloaded and installed in a global IT fire drill. Since all versions of Windows XP, 2000, NT 4 and Windows Server 2003 carry this flaw, they also had to be patched ASAP. Did your IT department have better things to do last week? Tough luck, huh?

"The thing about patching is that it is so darn reactive. And that can kill you," Dave Jahne, a senior security analyst at Banner Health System in Phoenix, told our reporter [Quick-



MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at maryfran.johnson@computerworld.com.

Link 40608]. "You need to literally drop everything else to go take care of patching."

Even worse — as if things could be — is that the Microsoft patches aren't even considered trustworthy enough to roll into a production environment without additional quality testing. In Arlington County, Va., for example, the IT staff

ran into deployment problems last week while using Windows Update server technology and switched to Novell's ZENworks so that staffers could automatically distribute the necessary patches, said Vivek Kundra, director of infrastructure technologies.

Among the many IT professionals watching this wormy nightmare unfold was Carl Ness, distributed information systems coordinator at Clarke College in Dubuque, Iowa. He e-mailed me with a straightfor-

ward but difficult question: Why?

"Why aren't people, especially at the chief executive level, asking: 'Why are we still using this stuff?'" Ness wanted to know. "If these problems were at this level for any other operating system, executives would have demanded that it be ripped out and replaced."

A longtime Novell and Unix user, Ness has 33 servers in production at the 1,200-student college, and only half a dozen of those run Windows. Yet he finds it maddening that disruptions like the Blaster worm are becoming business as usual. "We should not accept the phrase, 'Well, it's Microsoft, we just have to put up with it,'" Ness said, contending that IT pros need to push their managers harder to consider alternatives to Microsoft. Where is the tipping point for your company? How much more business disruption can you sustain?

Even the little snout who launched the Blaster worm zeroed in on Microsoft's software quality failings with this message embedded in the code: "billy gates why do you make this possible? Stop making money and fix your software."

That might be the answer — if only he could. ▀

PIMM FOX

Rx for Integration

LIKE AN off-the-rack suit, hugely integrated, tightly coupled application suites give you little room for customization or extension.

The problem with business process integration, as adroitly described by Greg Grosh, founder and vice president of Data Junction Corp. in Austin, is that you can't connect your mighty application to, say, a customer's SAP system, because each installation is unique and requires discrete connectors.

This condition is forcing a re-evaluation of business-process integration. It's no longer a consultant-led, money-draining cornucopia of solutions designed to satisfy every possible scenario.

Sorry, there's no one-size-fits-all silver bullet. Instead, you have to opt for more flexible and organic solutions that don't require a complete reworking of your core data or applications. Integration tools that work at the edge of your IT organization solving real problems (without the attention of high-cost IT coders) are the order of day.

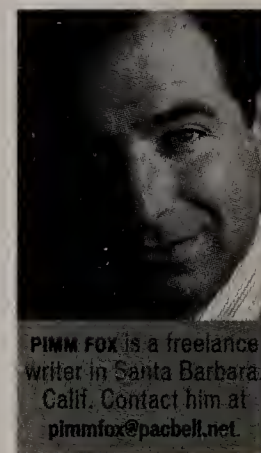
Here are some reasons why.

First, you can't afford to hire a passel of IT consultants to camp out in your offices while your workforce clamors for a basic fix to let one application connect to another.

"Business-process integration should be straightforward," says Grosh. "It's having two different apps or processes that you want to act as one." And you can't afford to wait until the vendor gets around to developing the perfect integration package.

Second, stop the abstractions, those layers of access for programmers. You shouldn't face a new application programming interface every time you want to do something small. There's no need to accept the burden of drilling down into — and then adding onto — the heart of your IT operation in order to align one application with another.

Third, there is change and failure. Any worthwhile integration solution



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recognizes the necessity of changes to the IT environment on at least one side; you, your partner or your customer will change something in an application. Your integration strategy must incorporate the costs for quick implementation of changes or for fixes of broken connections.

"People in accounts payable should be able to work with integration tools to make changes to a [purchase order]," Grosh claims. "You shouldn't have to hire a \$400-an-hour consultant."

A hint for considering a vendor: Ask where its revenue comes from — software sales or service? That tells you where your money will go.

Integration tools need to be simple, leave small footprints and operate on multiple systems without reconfiguration — that's something everyone can appreciate. ▀

MICHAEL GARTENBERG

Mac Myths And IT

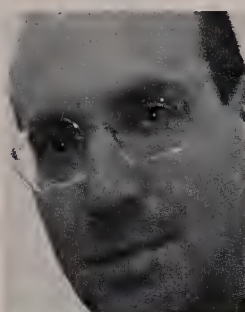
IF YOURS IS LIKE most IT departments, you probably aren't deploying Macintosh systems in large numbers. And if you're deploying them at all, you're doing so in niche spaces such as graphic arts, multimedia and publishing.

But the truth is that Mac OS has changed quite a bit in the past few years, and today's Apple systems offer a reasonable alternative to Wintel systems for many mainstream uses and are often best-of-breed tools for tasks such as desktop publishing, multimedia and other content creation. OS X, code-named Jaguar, and the recently announced successor called Panther are rock-solid Unix at the core, with Apple's elegant user interface on top. But if you plan on deploying them, you'll need to overcome your preconceptions regarding three myths about the Mac that still linger.

The first myth is that Apple computers are expensive relative to their PC cousins. Though Apple is certainly not a discount brand and will almost never offer the cheapest computers available, Macs are certainly price-competitive with PCs. Users do pay some premium for both the Apple brand and the innovation that goes into the company's often brilliant hardware design, but the premium isn't out of line with what users already pay for name-brand sys-

tems from vendors such as Sony, Hewlett-Packard or IBM. In many cases, comparable Apple systems are priced similarly, and in some cases they're even cheaper than the competition.

The second myth is that there's a lack of software available. Although OS X doesn't offer the sheer number of titles that Windows offers, there's an abundance of business software for the Macintosh. In some markets, such as content creation, there's actually more software available for the Mac. In addition, Microsoft offers a complete and compatible version of Office for the Macintosh, so knowledge workers can easily share documents and communicate with colleagues across operating systems. Apple's support of Web-based Internet standards means most Inter-



MICHAEL GARTENBERG is research director for the Client Access and Technologies group at Jupiter Research in New York. Contact him at michael.gartenberg@mindspring.com.

net-based applications will simply run without modification. The occasional lack of a specific application might hold back some deployments, but most organizations will never hit that wall.

The third myth is that Apple architectures are based on proprietary protocols. Though that was certainly true in the past, it isn't an accurate portrayal of Apple today. Now, Mac OS is one of the most standards-driven operating systems you can purchase. From MPEG 4 support in QuickTime to full TCP/IP support for networking and Wi-Fi protocols for wireless access, Macs are a seamless fit for most organizations' infrastructure. (Apple was actually the first operating system vendor to bundle TCP/IP support into a

commercial operating system.)

Does this mean Mac OS is right for your organization? Not necessarily. But it does mean your organization has more viable choices for desktop systems than you might have thought. Certainly, deploying Mac OS in areas that depend heavily on content creation makes good sense, but there are probably other places that could benefit as well. Most IT departments lament the lack of choice among desktop operating systems. The truth is that there are choices out there, and viable ones at that. IT departments that can overcome their traditional prejudices against Apple may well discover that there's a new PowerBook or G5 in their future, and once they do, they may never go back to Windows. ▀

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READERS' LETTERS

Outsourcing Angst

DOES THIS GET your blood boiling like it does mine ["Gartner Says 5% of Corporate IT Jobs Could Go Offshore by 2005," QuickLink 40344]? I see the accelerating trend of outsourcing American jobs as shortsighted, displacing not only today's job but tomorrow's as well, all to reduce corporate expenditures so that management can line their pockets today.

Olan Knight
Senior programmer/analyst,
Dallas

Labor on the Cheap

IN HER LETTER of July 21 [QuickLink 39592], Linda Kilcrease asks, "Why not instead hire the hundreds of thousands of skilled, permanently laid-off U.S. workers who have lost their jobs because of the H-1B and L-1 visas, and really benefit the U.S.?" The first thing to point out is that H-1B and L-1 visa holders pay U.S. taxes just as U.S. citizens do, so where is the benefit to the U.S.?

The statement that cheap labor is the only reason to want foreign workers in the U.S. is flawed. There is another very good reason to do this: better and more appropriate skills. I have lived and worked in the U.S. for six years now, and I have all

too often encountered the "not my job" mentality in the IT arena. There is also a reluctance to take any initiative. I don't place all the blame for this on the workforce; a management ethos of wanting to point fingers and apportion blame is far too prevalent in many U.S. businesses, and this naturally results in overly cautious staff. Don't blame overseas workers for taking advantage of the chances that come their way. I, for one, am actually earning less here in the U.S. than I could in other countries, but I choose to live here. Whereas I don't necessarily consider myself cheap labor, I do agree that I am worth a lot more than I am being paid. But who doesn't?

Kevin E. Ferguson
Lead system programmer,
American National Insurance Co., Galveston, Texas

Unsettled Law

COLUMNIST Ari Kaplan has some good points, but he writes as if matters concerning P2P file sharing are fully settled ["Sharing Is Nice, but It's Also a Crime," QuickLink 40217]. Many of these new laws will have to be confirmed by the courts, and they will certainly be challenged on the basis of unconstitutional limitations to "fair use." And they may very well result in the correction of both patent and

copyright law to drastically shorten the time limits and even to limit patents and copyrights to the original human creator. The idea of patents and copyrights is to give the originator adequate time to develop and market a product before it enters the public domain, but the time needed to do this has been drastically shortened by technology. It follows that the time period for both copyrights and patents should also be drastically shortened.

Charles J. Lingo
Ponchatoula, La.

Shaky Driver

AS A POINT OF INTEREST, it should be noted that Microsoft's iSCSI Driver 1.0 doesn't support dynamic volumes under Windows 2000 or 2003 [QuickLink 39646]. So while it will allow access to basic volumes, these can't be expanded without destroying the partition, since creating a volume set is a dynamic disk feature. This means its usefulness is limited, though the product documentation indicates that this problem will be fixed in future releases.

It should also be noted that testing of this driver during a recent iSCSI technology evaluation showed it to have questionable stability in a clean build environment compared with alternate iSCSI ac-

cess methods. As with any Version 1.0 software, my advice would be to tread warily.

Mark Mulholland
Senior systems consultant,
Eagle Technology Group,
Auckland, New Zealand,
mark.mulholland@eagle.co.nz

Patch Cycle

HHEY, YOU ALL GOT what you wanted ["Latest Vulnerability Includes Windows Server 2003," QuickLink 39988]. You wanted Microsoft over Novell, and now you've got it. I sat back and watched and shook my head.

Oops, time for you to add another patch and reboot! Hurry!
Robert J. Ostman Sr.
Systems engineer, Severn, Md.,
rostman@qis.net

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Corralling Security Data

As security devices proliferate, administrators face the daunting task of collecting and correlating data from disparate sources. Vendors offer tools that can help, but customization and scripting are still difficult. **Page 28**

FUTURE WATCH

New Spin for Electronics

IBM's spintronics technology has already increased disk drive capacities. A planned semiconductor implementation may blur the line between storage and memory. **Page 30**

SECURITY MANAGER'S JOURNAL

Faulty Rules Foul Router Protection

Here's how an administrator's simple, time-saving step ended up voiding a router rule — and left a corporate LAN open to denial-of-service attacks. **Page 32**

RFID Tunes Into Supply Chains

Outlook: Retailers and their suppliers are testing radio frequency identification tags, but production apps and mature software are still years off. By Carol Sliwa

EMERGING TECHNOLOGIES

EVERYONE IN the retail industry stopped and took notice

when Wal-Mart Stores Inc. declared in June that it will urge its top 100 suppliers to deliver pallets and cases equipped with radio frequency identification (RFID) tags by 2005. Any directive issued by the world's largest retailer has the potential to drive sweeping adoption, and this particular one could spell major changes for supply chain management.

Wal-Mart thinks that the nascent technology, which can automatically identify a container's contents without requiring line-of-sight scanners, can help to reduce the costs associated with tracking inventory.

Given that Wal-Mart moved 2.5 billion cases through its distribution centers during one six-month period last year, it's not hard to imagine the savings that the company might realize by reducing the time and labor associated with inventory tracking.

One of the chief suppliers to the retail industry, Procter & Gamble Co.,

Glossary

RADIO FREQUENCY IDENTIFICATION: A method of identifying unique items using radio waves. While lasers must see a bar code to read it, radio waves don't require line of sight and can pass through materials such as cardboard and plastic.

TRANSPONDER: A radio transmitter/receiver that's activated when it receives a predetermined signal. RFID tags are sometimes referred to as transponders.

PASSIVE TAG: An RFID tag that doesn't use a battery. The tag draws energy from an electromagnetic field created by the reader.

READER: A device that communicates with the RFID tag and passes digital information to a computer.

has another angle. The Cincinnati-based company estimates that 10% to 16% of its products may be out of stock at any moment. Reducing that number by even 10% or 20% could mean a revenue boost of between 1%

and 3%, says Larry Kellam, director of business-to-business supply network innovation at the consumer goods maker. With over \$40 billion in annual revenue, that would translate to more than \$400 million in new revenue.

But neither suppliers nor retailers will realize much benefit until the technology overcomes a series of technical and engineering hurdles. For instance, the tags need to come down in price. To do that, manufacturers need orders for billions of tags, and they need to improve their manufacturing processes to support those volumes.

Tag readers also need to improve in both performance and price. In addition, the software infrastructure to handle RFID tag data must advance past the work-in-progress stage, and standards need to be established to enable different vendors' tags and readers to work together using a wide range of radio frequencies.

"It's one of the most overhyped technologies that we're talking about today," says Jeff Woods, an analyst at Stamford, Conn.-based Gartner Inc. "It's going to require a lot of creative thinking and hard work to get from vision to reality."

RFID RESOURCE GUIDE

For more on RFID technology and a list of product vendors, visit our Web site:

 **QuickLink a3530**
www.computerworld.com



This RFID tag, from Rafsec Oy in Tampere, Finland, contains a chip (the small black square) and a coiled antenna that are connected by a bridge. The tag is about the size of a credit card.

PHOTO COURTESY OF RAFSEC

Tags Get Cheaper

AN RFID TAG, also known as a transponder, contains an antenna and a microchip that transmits information about the tagged item to a reader. The tag reader then converts the radio waves returned from the tag into a digital form that can be passed to computer systems.

The technology has been used for years to track animals, collect tolls on highways and grant access to buildings. But cost has kept RFID tags from being used on a large scale to identify and track goods in the retail supply chain.

P&G's Larry Kellam says tags were a dollar apiece in 1999 when the company began looking at RFID technology to curb counterfeiting and retail theft and reduce out-of-stock situations. So P&G joined The Gillette Co. and Uniform Code Council Inc. as founding sponsors of the Auto-ID Center, an industry-funded research project at MIT.

One of the Auto-ID Center's chief missions has been to find a way to reduce the cost of RFID tags. The center recommends the use of passive tags containing a limited amount of information, because chips with less memory are cheaper. Passive tags draw power from electromagnetic waves that

Continued on page 26

pilot

navigator



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Continued from page 23

the tag's readers generate, whereas more expensive battery-powered active tags broadcast signals.

The Auto-ID Center's researchers also realized that the tag's silicon chips would need to be smaller to lower the cost. But reducing the size of the chips isn't easy, since robots have trouble handling chips that are the size of pieces of glitter, notes Kevin Ashton, executive director of the Auto-ID Center, who is on loan from P&G.

Alien Technology Corp. in Morgan Hill, Calif., an Auto-ID Center sponsor, is at the forefront of a new chip-packaging process called fluidic self-assembly that it hopes will reduce the cost of passive tags from 50 cents in small quantities today to 5 cents at a volume of 10 billion by 2006, says Tom Pounds, vice president of corporate development and product strategy. An Alien manufacturing line capable of producing a billion units annually will go on-line early next year, and a second manufacturing line capable of producing 10 billion units per year is planned for 2005, Pounds says.

Gillette made waves earlier this year when it negotiated a deal with Alien to purchase up to 500 million tags. Company spokesman Paul Fox says Gillette will achieve its goal of a sub-10-cent tag for field tests over the next few years, although Gartner's Jeff Woods says he thinks Alien is losing money on that deal.

Even though Gillette is doing pilots with European retailers on individual items, the company doesn't foresee item-level tagging in production for at least 10 years, according to Fox. For that to happen, per-tag costs must drop to a penny or less, he says.

Both Wal-Mart and Gillette have decided to focus on pallets and cases. The Bentonville, Ark.-based retailer this spring scrapped plans for a store trial with Gillette. Wal-Mart spokesman Tom Williams says item-level RFID is years away for the retailer.

Those testing the technology are encountering challenges at the pallet and case level. Woods says some users are experiencing read rates of less than 80% with tags. Wal-Mart found radio-wave interference problems in field tests of 500 pallets of paper towels.

And metal and liquids don't mix well with radio waves. That meant that P&G had to test different tags, since Bounty towels have different properties than Pantene shampoo.

"These problems are not fundamental," Ashton claims. "They will be solved with time and experience."

Readers Are Fundamental

A TAG READER COMMUNICATES with an RFID tag and passes on the information to software applications. Readers work with passive tags using a method known as inductive coupling, in which a reader's antenna creates a magnetic field with the tag's antenna.

Although passive tags keep costs down, their readers can still cost more than \$1,000, and most read only chips that use a single frequency. To address the problem, the Auto-ID Center designed reference specifications for software-based "agile" readers that can read different types of tags and tags that operate at varying frequencies. Ashton predicts that the reader cost can be cut to \$100 to \$200

each at a volume of 10,000 units within three years.

"That's an important step, because it means you no longer have to have a proprietary tag-reader combination," says Jim Crawford, vice president of Retail Forward Inc., a research and consulting firm in Columbus, Ohio. "It lets you put in a single infrastructure to read multiple tags."

But Paula Rosenblum, an analyst at Boston-based AMR Research Inc., says there's little evidence that the price of readers is dropping. Many readers don't work reliably, she adds.

The read range of a tag depends on the the reader's power, the frequency that the reader and tag use to commu-



nicate, and antenna size.

Gene Alvarez, an analyst at Meta Group Inc., says a powerful reader will be needed to read a passive tag from long distances. The read range for a passive tag is now three to six meters, he says.

The Software Conundrum

EVEN IF ALL THE TAG AND READER issues are worked out, simply slapping tags on pallets, cases or individual products and installing readers won't produce the real-time flow of data that retailers and suppliers need to gain the full benefits of RFID technology. RFID is going to change business processes so fundamentally that users will have to either install new, possibly experimental applications or endure a massive rewrite of existing programs, warns Gartner's Jeff Woods.

"I don't see anything [happening] with RFID-centric warehouse management or manufacturing, or even retail processes," he says. "It's a classic innovators' dilemma, because everyone is so heavily invested in

bar-code-based infrastructure and processes that they are the least likely ones to make the wholesale transition quickly."

The first applications will emerge in the next two to three years, Woods says. Emerging vendors, such as Oat-Systems Inc. in Watertown, Mass., are working on the problem, as are established vendors such as Manhattan Associates Inc., SAP AG and IBM.

"Through 2007, we're going to see primarily applications that use RFID tags in the context of bar-code-based processes — things like receiving at the back door with an RFID tag instead of a bar code," Woods predicts. "It's the three-to-seven-year time frame when we will start to see en-

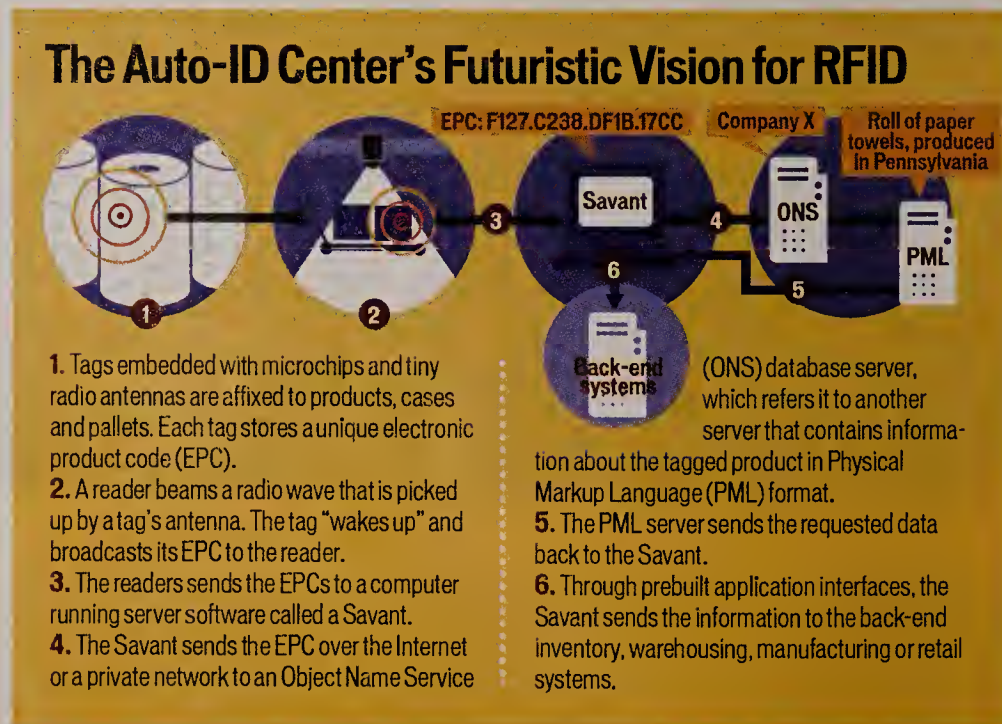
tirely new processes come about."

The Auto-ID Center's response to managing the flow of data is special-purpose server software, called a Savant, which it predicts will be running in stores, distribution centers, offices and factories. Savants will gather, store and act on information and interact with other Savants, deciding which information needs to be forwarded up or down the supply chain, the center claims.

Under the Auto-ID Center's proposal, RFID tags will contain a limited amount of information in a 64- or 96-bit electronic product code (EPC). The reader pulls the EPC from the tag and passes it to a Savant, which in turn forwards it to an Object Name Service server and then a Physical Markup Language server on a local network or the Internet to find information stored about the product. The Savant can then retrieve the file and forward it to the company's inventory or supply chain applications.

"The Auto-ID Center moved the problem of data from the tag into the system," says Steve Halliday, president of High Tech Aid in Gibsonia, Pa. But he predicts that some companies will want tags that can store more data so they can find out the contents of pallets and cases on the spot where the tags are scanned, rather than having to connect to a Savant and other servers.

"All that RFID does for a retailer or a manufacturer is give them more granular information about their products," says Crawford. "Mastering that process is the critical efficiency issue for the next 20 years easily for retailers and manufacturers." ■



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LIKE MANY COMPANIES, Online Resources Corp. has deployed host- and network-based intrusion-detection systems (IDS), firewalls and antivirus tools on its networks. But until it installed a security event management suite, the company had a hard time dealing with the deluge of data pouring in from its various security systems. Not only was the incoming data voluminous and highly unreliable, but the IT staff also had to collect it from each system and then manually correlate it.

The Security Information Management suite from Edison, N.J.-based NetForensics Inc. has changed that by automating Online Resources' process of gathering, consolidating, correlating and prioritizing that data, says Hugh McArthur, information security officer at the Reston, Va.-based online bill processor. "It has given us a single place where we can go to get the information we need," he says.

Many companies are turning to centralized security event management tools to help them make sense of crucial security information, analysts say. The ever-increasing number of security appliances around the network perimeter has created a stream of data that needs to be analyzed and correlated, says Michael Engle, vice president of information security at Lehman Brothers Holdings Inc. in New York.

MICHAEL BARTALOS



Corralling SECURITY Data

Security event management tools can consolidate and correlate data from disparate security devices across the network security perimeter, reducing the analysis workload.

By Jaikumar Vijayan

New and proposed regulations that will require companies to constantly monitor their networks for security incidents are also increasing interest in these tools, says Michael Rasmussen, an analyst at Forrester Research Inc. in Cambridge, Mass. "There is a tremendous driver in the security standards and legislation area. The reason why people are buying [such technology] is a direct result of this," he says.

Volume Control

IDSs, firewalls and antivirus software, as well as operating systems and applications software, can detect and report an enormous number of security events daily, say users and analysts.

For instance, the security incident management system at Lehman gathers and analyzes information about more than 1 million events from 15 different systems daily, according to Engle. This includes data from IDSs and authentication systems, a telephony password reset system and an anomaly-detection system, as well as logs from Lehman's main e-commerce, Windows and Unix systems.

By year's end, the firm hopes to have a new system in place that will help it gather and analyze more than 80 million daily events, including consolidated firewall log data.

Sifting through this volume of data without some sort of consolidation and correlation technology is nearly impossible, thereby making the data worthless, says Pete White, a security architect at Houston-based M.D. Anderson Cancer Center, whose own firewalls generate between 15 and 30 alerts every second. Security event management software helps "separate the wheat from the chaff," he says.

Event management software can help cut through the noise, Engle agrees. The software works by collecting information from individual security systems such as IDSs and firewalls. While some products deploy agent software to collect the information flowing out of them, others just use the Simple Network Management Protocol reports and system logs generated by such systems.

The tools then typically "normalize" the data by converting it into a common format and automatically filtering out duplicate data, such as multiple entries for the same virus attack. The normalized data is then dumped into a central database or repository, where correlation software can match data from different systems and look for patterns that might indicate an attack or threat.

SORTING THROUGH THE PRODUCTS

When Lehman Brothers first started implementing an event management system two years ago, there were just a few well-known products, says Michael Engle, the company's vice president of information security. Today, there are many products available.

Vendors fall into three broad categories, says Michael Rasmussen, an analyst at Forrester Research. The "pure-play" vendors include NetForensics, Intellitactics Inc., Guarded-Net Inc. and ArcSight Inc.

The security suite vendors include Symantec Corp. and NetIQ Inc. Then there are the traditional management software vendors that have expanded into the security management software market, such as IBM, with its Tivoli Risk Manager, and Computer Associates International Inc., with its eTrust Security Command Center.

While the pure-play vendors focus on security information management and event-correlation software, vendors of suites sell security event management as part of a broader application set. NetIQ, for instance, sells incident and event management as part of a suite of capabilities that includes

policy and compliance management, identity management and user provision, and configuration management. Vendors such as CA and IBM, meanwhile, are building on their systems management capabilities with their event management tools.

Choosing the right vendor depends on your specific needs and on the ability of the product to gather information from the security systems installed on your network, says Hugh McArthur, information systems security officer at bill processor Online Resources.

"A lot of it looks good on paper. But make sure the product can support the devices that you are going to deploy it on," McArthur says. Otherwise, users have to develop code for tying the product into the network—a process that can be both costly and time-consuming, he says.

Also, while a lot of these products are good at analyzing IP data from firewalls and IDSs, they're not as good with data collected from operating system and application software logs, Rasmussen says.

— Jaikumar Vijayan

Finally, threats are prioritized based on their severity and the importance of the systems that are vulnerable. Data that suggests an attack against a critical e-commerce server, for instance, would be given a higher priority than an attack against a file server.

IT security administrators can view the information using a Web- or Java-based console, or dashboard, or the system can be configured to send alerts to pagers or other devices. Dashboards can give companies a real-time snapshot of what's going on inside the corporate network. "We are able to see events happen more quickly. It allows us to react faster if we see some activity bubble up in our systems," says White.

The benefits of deploying such software can be enormous, Engle says. When Lehman first installed an IDS in 1999, it generated more than 600 alerts daily—most of them false alarms. Today, thanks to the event-correlation features of its management system, administrators receive fewer than 10 per day. The system today is "turning more than 1 million events down to less than 10 alerts," Engle says. Such technology allows companies like Lehman to pinpoint threats far more efficiently, identify trends that might

indicate an emerging threat and fine-tune incident response, Forrester's Rasmussen says.

The data that centralized event management systems capture and store is also useful for forensic analysis, says Nitin Ved, chief operating officer at NetForensics. Such systems let companies drill down into the details of an attack, piece together relevant information from different systems and quickly build a composite of events leading up to a security incident.

The technology lets administrators do all this without the dedicated attention to individual systems that would otherwise be required, says Bill Stevenson, security manager at Irvine, Calif.-based New Century Financial Corp., which uses the NetForensics suite.

The Downside

The events statistics maintained by security event-correlation systems can also be useful for measuring the effectiveness of IT security, says White. But as with any other technology, there are several major caveats associated with the use of such products. The biggest has to do with the quality of the data that is fed into such systems.

The old adage "garbage in, garbage

out" holds true with both event and incident management software, says Sweta Duseja, a product manager at security vendor Check Point Software Technologies Ltd. in Seattle. That's why it's important to ensure that the right filters and rules are set for capturing the information that's fed into the system, Engle says.

Indiscriminate data collection can create problems. For instance, every time a user clicked on CNN's Web site, it generated 144 separate log events on Lehman's systems, most of which were useless data. "Initially, we were sending too much data into the system because we thought that would put us in a good place," Engle says.

Also, implementing event-correlation technologies often involves a degree of customization that may not be apparent at first, White cautions. Despite the support for multivendor technologies touted by several vendors, users often need to develop scripts for capturing information from specific security devices—an effort that can be time-consuming and costly, White adds.

The tools can also impose quite a steep storage requirement on the organization, depending on what it wants to do with the data, says New Century's Stevenson. "It all depends on how many devices you are plugging into the system and how far back you want to go with the data. It can be for as little as a month or two or for as long as six years. You never know," he says. For this reason, many products support up to 2TB of data out of the box.

Despite the growing maturity of such technologies, no single product can gather all the relevant security-related information from across operating systems, applications and the network, Rasmussen says. For instance, while some products may excel at gathering network-level data, other products may do so at an operating system level.

Upfront costs can be steep as well. Event management systems typically start at over \$100,000. That puts them out of reach for many businesses that would otherwise be attracted to them, says Bill Spennow, chief information security officer at the Georgia Student Finance Commission in Tucker, Ga.

But for organizations that can afford it, users and analysts say, the technology can yield rich benefits. ▀

PRODUCTS AND VENDORS

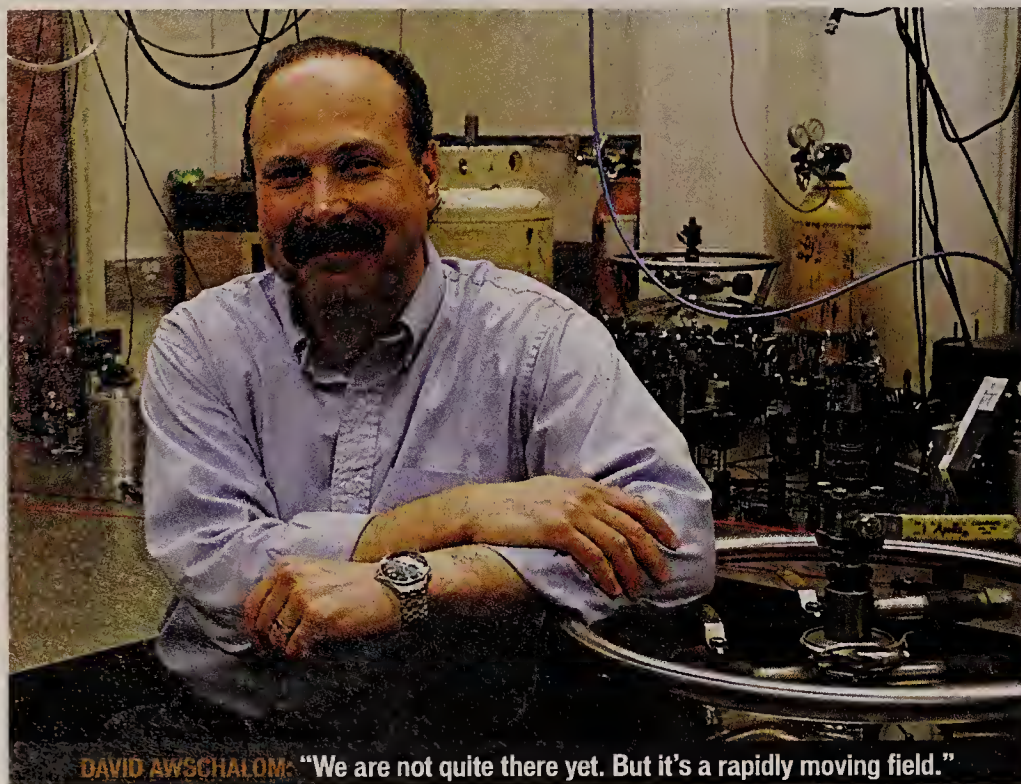
For a sample listing of vendors of security event management software, visit our Web site:



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New Spin for Electronics



DAVID AWSCHALOM: "We are not quite there yet. But it's a rapidly moving field."

Subatomic properties will remake computing.
By Gary H. Anthes

FUTURE WATCH

IMAGINE A DATA STORAGE DEVICE the size of an atom, working at the speed of light.

Imagine a microprocessor whose circuits could be changed on the fly. One minute, it would be optimized for database access, the next for transaction processing and the next for scientific number-crunching.

Finally, imagine a computer memory thousands of times denser and faster than today's memories. And non-

volatile, so it retains its contents when the power is off.

All of these and more are on computing's horizon, thanks to the exploding field of spintronics. Spintronics, from

"spin transport electronics," isn't entirely new. The spintronic effect called giant magneto-resistance was introduced by IBM in 1997 in its GMR disk-read head. As a result, disk capacities have jumped by a factor of 100 in the past five years.

Electronic circuits are driven by electron flows, which have a charge that can be measured and controlled.

But electrons not only flow; they also spin like tiny bar magnets. Depending on their orientation, the spins are said to be "up" or "down."

This additional variable, or "degree of freedom," means that electrons can do more things and convey more information than they do in conventional electronics. "Spin gives you an additional knob to turn," explains Stuart Wolf, a program manager at the Defense Advanced Research Projects Agency (DARPA), which is funding much of the spintronics research in the U.S.

The most immediate research goal is to produce magnetic random-access memory (MRAM), which stores data using magnetism rather than electrical charges. Unlike the dynamic RAM in your PC, MRAM is nonvolatile.

IBM is working with Munich-based Infineon Technologies AG and says it will have MRAM in production as early as 2005. It will be 50 times faster than DRAM and 10 times denser than static RAM, and it could eventually replace both, says Stuart Parkin, an IBM fellow at the company's Almaden Research Center in San Jose.

Others have even suggested that MRAM might replace disks for data storage. Putting logic and storage in a single chip would eliminate the slow disk I/O that's a bottleneck in most computer processing.

IBM's MRAM will use magnetic tunnel junctions, an application of spintronics in which electrons are allowed to "tunnel" between two ferromagnetic layers based on their spin. Each junction can store one bit. "It promises a sort of universal RAM with very high performance — high writing and reading speeds — plus very high density and nonvolatility," Parkin says.

Nuclear Memories

Further out, researchers are working on still more exotic applications of spin. David Awschalom, director of the Center for Spintronics and Quantum Computation at the University of California, Santa Barbara, is looking at what might be done with the spin of an atom's nucleus, a new idea.

"The subatomic part of the atom would store the information, and the electron would act as the bus to carry information in and out of the nuclear subsystem," Awschalom says.

He aims to build an optical-based information processor in which beams of light would transfer information to the

nucleus through electrons. Such nuclear memories would be "many orders of magnitude" denser and faster than traditional semiconductor memories, he says.

Indeed, more broadly, the thrust of spintronics research will be to combine electronics and photonics with magnetism — which traditionally involves metals — in semiconductor materials. That will enable ultrafast and ultraefficient submicron devices that integrate computing, communications and storage. The slow interfaces between different materials that convert one kind of signal or property into another would be gone, and the latencies that typically slow the movement of data from one processing stage to another would be greatly reduced.

"You'd have everything integrated in a much simpler circuit," says DARPA's Wolf. "They would be much like existing semiconductor devices, except the current is spin-polarized." That would

enable, for example, the construction of very fast communication switches. "You could call it spin photonics," he says. "They can easily operate at terahertz speeds."

A semiconductor device can't use spin until a way is found to get spin-polarized electrons into it, and that has proved difficult.

But IBM recently demonstrated that it can use magnetic tunnel junctions to inject the current, as they do for MRAM.

IBM's Parkin says spintronic semiconductors could be used to build reconfigurable logic devices. "So maybe your computer could be optimized for certain instructions by rearranging the way [logic] gates are connected, on the fly," he says.

Another tough challenge has been to create magnetic semiconductors that sustain their spin states at room temperature, but physicists, materials scientists and engineers have made tremendous progress on that front just this year. "We are not quite there yet," Awschalom says. "But it's a rapidly moving field. If you'd asked me a year ago where we'd be today, I would have been largely wrong in my assessment."

The rapid development of spintronics seems likely to continue, says Awschalom. "The theory is in quite sound shape. What's exciting about this field is there are no obvious showstoppers. There are many challenges, though." ■

WHAT IT DOES

Spintronics seeks to harness the spin of electrons, in addition to their charge, to build superpowerful devices for computing, communications and data storage.

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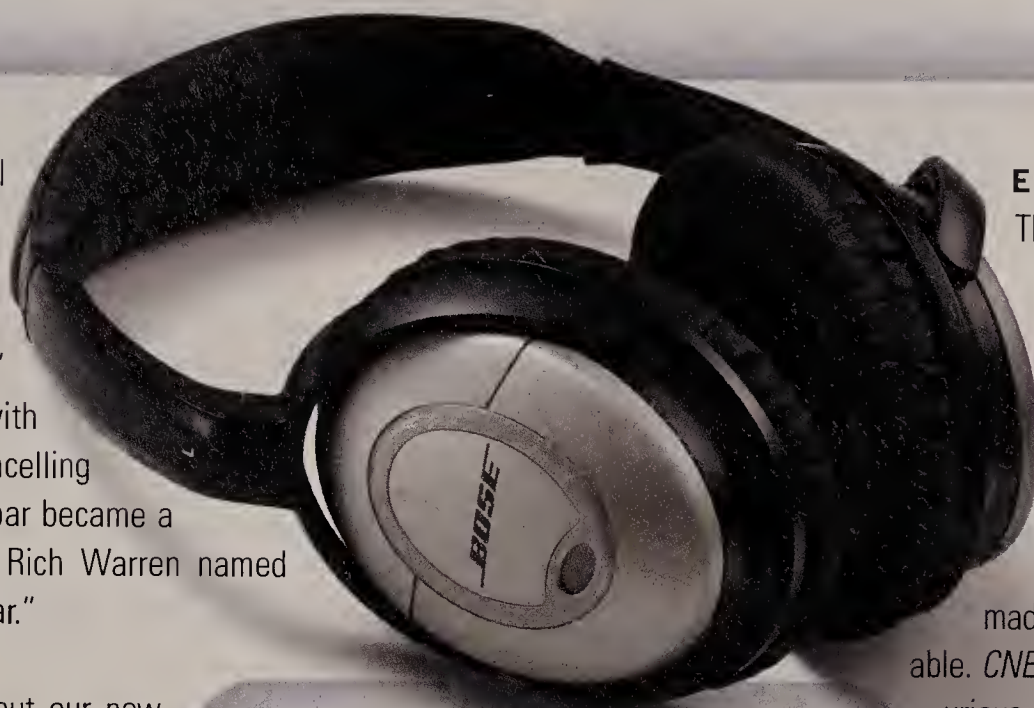
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Faulty Rules Foul Router Protection

A misconfigured access-control list leaves a global network open to a denial-of-service attack. **By Vince Tuesday**

THIS WEEK, my team and I discovered a vulnerability in the Cisco Systems Inc. equipment we use in our global network. There are 253 possible IP-based protocols in IP Version 4, and the majority of Cisco routers and switches have a serious problem with four of them. The flaw leaves unpatched equipment open to denial-of-service attacks.

Once the Cisco device receives a certain number of IP packets of Type 53, 55, 77 or 103, it stops functioning. If a switch or router doesn't know

what to do with a given packet, it just leaves it in the queue until the queue fills up and the device stops working.

The first reports of this vulnerability made it clear that the packets had to be targeted at the router being attacked in order to succeed. I immediately thought we would be fine, since our core routers have access-control lists (ACL). We set these up to operate like a minifirewall that can allow and deny various kinds of traffic.

To protect our routers, we set a rule that routers accept specific traffic types coming only from our internal management machines. We don't bother listing every kind of bad data. Instead, we drop everything except the handful of things we need. So our routers drop those four vulnerable protocols without processing them, along with every other IP-based protocol except TCP and the User Datagram Protocol.

This meant we didn't have to do anything. Or did it? We

checked our internal routers to make sure the right protections were in place and then performed the same check on our Internet-facing routers. Our firewall drops the four protocols mentioned earlier, so it would be difficult for someone to attack our internal routers. However, the external routers that connect to multiple Internet service providers

have to be outside the firewall, and so they might accept those protocols if they were misconfigured.

I checked our external-facing routers

from a remote provider's site, connecting to each and scanning to see on which protocols and ports the routers were listening, and I was very surprised when one answered on Telnet.

We use Telnet to manage some of our routers because not all versions of Cisco's Internetworking Operating System (IOS) support Secure Shell, our preferred encryption method. But Telnet wasn't supposed to accept connec-

tions from outside our company. The router's ACL should have limited connections to only those from authorized devices with addresses internal to our network.

As it turned out, the ACL had been applied correctly, and other traffic was being dropped as designed. Then I noticed that the IP address in the rule didn't match the IP address of the router I was examining. It belonged to another Internet-facing router. A network administrator must have cut and pasted the rule set for the router's ACL without editing the IP address.

After we corrected the IP addresses in the ACL, we thought we could rest easy: No attacker could get any flawed data to our machines.

TTL Tempest

I have to despise attackers. It's a professional requirement of the security field to hate those who make our lives difficult. But once in a while, I have to give the brightest ones a bit of respect.

Some clever person figured out that you might not have to send traffic to a router to get it to process the data. Every packet on the Internet has a Time To Live (TTL) counter setting, and every time a router handles a packet, its number decreases by 1. This keeps packets from circulating forever.

If the TTL reaches 0 while passing through a router, then that router must process the packet to decide if someone needs to be sent a warning that the packet didn't make it. I received an e-mail security alert from a trusted source that said if you arrange the TTL of Packet Types 53, 55, 77 or 103 so that they reach 0 just as they hit a Cisco router like ours, that router will

process the packets despite the ACL settings. The packets won't match the ACL, as they aren't destined for that router but for addresses behind it. If the router processes packets with these four IP-based protocols, then the packets will get stuck, and the router will fill up and stop.

That's clever but annoying, because it meant we would've had to make sure that we had deployed not only the right ACLs but also the new versions of IOS to fix the problem. Each time we thought we had this problem under control, it popped up again. We can test a new release of IOS, but it takes time and is risky to deploy, whereas ACLs are well understood and low risk.

Then, as we were rushing about with our testing, Cisco contacted us to say that this risk doesn't exist. It said the routers discard the TTL packets without problems. Were the hackers wrong? I have to trust that Cisco knows best what its equipment can do.

Once the new version of IOS is out of testing and deployed, we'll be safe. Until then, we'll closely monitor how well the ACLs are protecting us.

The strangest thing about this whole issue has been that a large number of our customers have asked what we're doing about it. I don't understand this. I would never ask another company what it was doing, since the answer wouldn't cause me to do anything differently.

I also don't have the resources to ask every supplier what it's doing about such issues. Rather than try to have enough people free to collate all that information, I'll just protect myself from the possible attack, be safe and not worry about what others do. ▀

WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Vince Tuesday," whose name and employer have been disguised for obvious reasons. Contact him at vince.tuesday@hushmail.com, or join the discussion in our forum: [QuickLink a1590](#)

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SECURITY LOG

Security Bookshelf

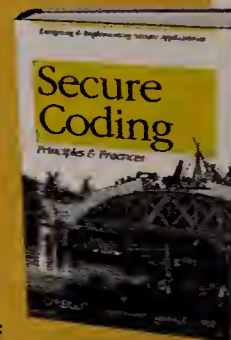
Secure Coding: Principles and Practices, by Mark G. Graff and Kenneth R. van Wyk, O'Reilly & Associates, 2003.

Judging by the number of security bugs that continue to emerge, a good book about writing secure code is quite timely.

The authors of this guide have plenty of experience in trying to produce secure code, and those experiences shine through in the many real-world examples they give and the practical approaches they take in architecture, design, implementation, operations and testing.

This is an excellent book to dip into for ideas to improve coding practices in your organization. It doesn't go into all the technical details, but it does help you make sure that you're asking the right questions. *Secure Coding* includes a comprehensive bibliography and Web links.

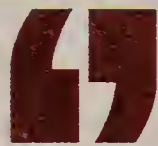
—Vince Tuesday



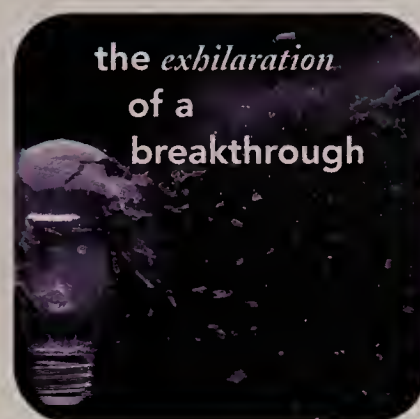
Most Underrated Vulnerabilities

The STAT network security unit at Melbourne, Fla.-based Harris Corp. released its list of the most underrated and most overrated security vulnerabilities a week ago. Remote procedure call vulnerabilities probably wouldn't top the list after last week's bout with the Blaster worm:

- 1 **RPC vulnerabilities**
- 2 **Distributed Component Object Model vulnerabilities**
- 3 **Wireless vulnerabilities**
- 4 **Keystroke-logger vulnerabilities**
- 5 **Spyware programs**



I checked our external-facing routers . . . and was very surprised when one answered on Telnet.



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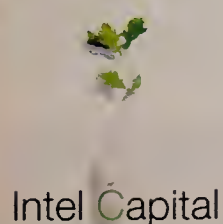
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Digital Document Security and IT: Everything you need to know.

Q: What are the most significant digital copier security issues?

A: Various copier print controllers are actually servers that queue and permanently store multiple document files, providing administrator access to the documents. At a minimum, most digital copiers retain the last document processed; some even retain multiple documents totaling hundreds of pages. Others redirect print jobs when the printer is busy or jammed, making "denial of service" attacks possible.

Q: How does Sharp protect the network interface?

A: The Sharp Ethernet card allows administrators to restrict access and disable unnecessary protocols. With this network card, the Sharp digital copier is essentially protected by its own firewall.

Q: How can you be sure that security products actually perform as claimed?

A: The Common Criteria program—administered by the U.S. National Security Agency and the National Institute of Standards and Technology—evaluates security solutions. Products that are validated under the program meet security levels consistent with ISO 15408 methodology.

Q: How can Sharp improve IT security?

A: Sharp offers print privacy solutions designed to restrict unauthorized personnel from seeing confidential materials. Copier access can be controlled and monitored, while documents retained in printer/copier/scanner/fax memory are immediately cleared to eliminate unauthorized access.

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DAN MEZICK

Outsourcing 2.0: Collaborative Development

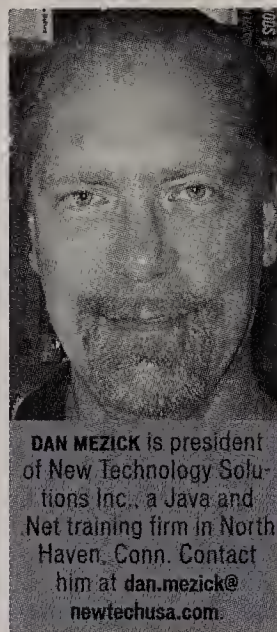
CORPORATE IT is in the middle of a huge sea change. The Internet has made it possible to cut IT costs by 50% or more by employing out-sourcers in jurisdictions with low labor costs. What's the next wave, and what are the implications for corporate IT departments?

The answer is complicated, but the implications are clear: We're moving toward a new model for IT outsourcing, which I call Outsourcing 2.0. At the center of this model are new tools that enable global collaborative development.

In a few short years, corporations are going to be paying big money for IT professionals who can fill a hot new job title: collaborative development manager. This manager will marshal development teams dispersed over the globe and tie them together with peer-to-peer (P2P) tools to create great software. The result will be cost savings that exceed the off-shore model.

The tools, which are critical connecting points, are here now. The open-source community has built and leveraged P2P developer tools for years. Now Microsoft developers can, too. The company is hosting an application service provider version of SourceSafe on www.GotDotNet.com.

Microsoft has also announced collaboration features in the upcoming Whidbey version of Visual Studio. These features will enable developer collaboration worldwide and signal that collaborative development is a trend — and not mere-



ly a fad. This is confirmed by Mike Werner, director of Microsoft's emerging business team in Boston. "Developer collaboration is promoting community at all levels of the software-development ecosystem," he says. "We recognize that one size doesn't fit all, and we have to be flexible in how we build tools and programs for this dynamic segment." Translation: Developer collaboration is a big, Web-

enabled deal that can't be ignored.

What's driving the collaboration trend, and what does it mean for U.S. corporations? First, the wage disparity. Offshore compensation will rise, U.S. compensation will fall, or some combination of the two will occur. Direct collaborative development between U.S. IT managers and freelance offshore developers will drive this trend further.

Second, specialized service firms such as Assembla are catering to small companies with bare-bones budgets. Over time, these firms will target midsize U.S. corporations. Larger businesses, valuing predictability equally with cost savings, are content with traditional offshore outsourcing. But that will change as some use a mixed model and explore the use of collaborative P2P development tools.

The key to this is that IT shops stateside will need truly talented IT pros to pull it all together. Skills needed will include four to six years' IT experience, project management skills and solid business knowledge. I expect U.S. IT shops to start looking seriously at training IT managers to handle these collaborative project tasks. Already, the most confident foreign developers and the most cost-motivated small software start-ups are doing just that.

Astute IT pros with the requisite skills will immediately get aligned with these forces and create a new job in U.S. IT — the collaborative development manager. U.S. companies that have large IT shops might begin looking at the Microsoft tools, experimenting with training and deploying IT managers to explore the potential. As the trend gains momentum, a mass of late-comers will join the game.

One aspect corporations will have to manage is the close working relationships between IT managers and developers dispersed throughout the world that will develop with the help of daily e-mail. If improperly managed, there could be problems in these relationships if and when an IT manager departs for greener pastures. Expect IT pros with a proven track record in this area to become targets of bidding wars.

The IT megatrend toward collaboration and P2P technologies is accelerating worldwide. Corporations that experiment now by finding the right people to make the new collaborative model work will enjoy cost savings not available by any other method. ▀

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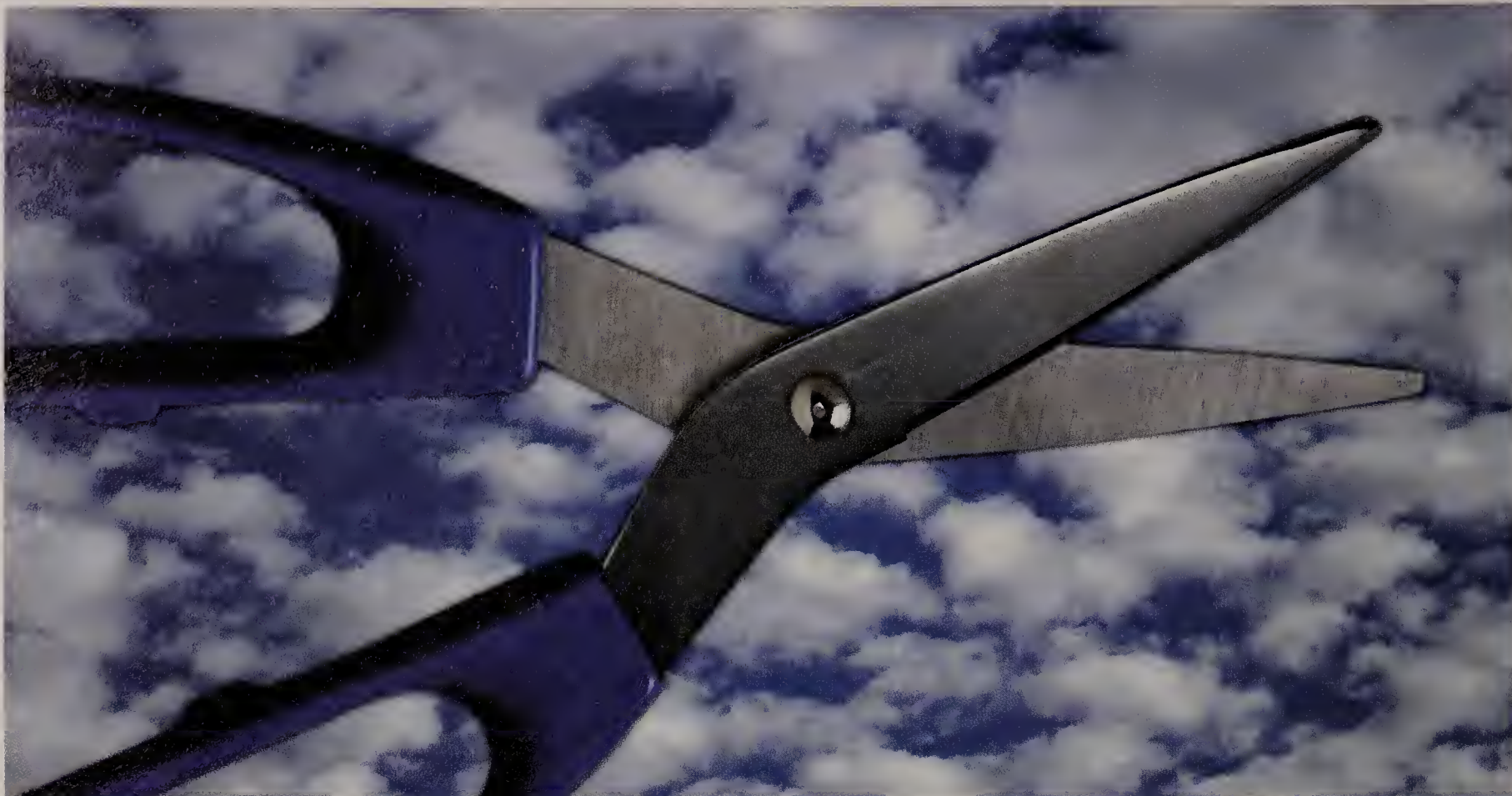
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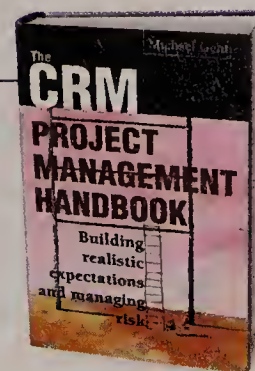


Don't Panic, Push Back

Worried about a software audit? The worst thing you can do is panic. The best thing to do, says Portland Public Schools CTO Scott Robinson (left), is stand strong and make your case against the vendor visit. **Page 42**

CRM: Ready or Not?

Check out this new book to help you rate your company's preparedness for embarking on a CRM project. **Page 40**



OPINION

The True Costs of Software

A simple TCO analysis isn't enough to figure out the underlying costs of "free" software, says columnist Alan MacCormack. **Page 44**

WITH THE ADVENT of Song this past spring, Delta Air Lines Inc. is making a second run at the low-fare airline market. But whereas early low-fare legends like Southwest Airlines Inc. billed themselves as no-frills, low-tech and high-touch carriers, Song touts high levels of all three.

Promoting itself as the "all-digital airline," Song plans to use a barrage of in-flight amenities and entertainment to go head-to-head with the leather seats and individual seat-back satellite TV screens of JetBlue Airways Corp., which has been poaching with impunity in Atlanta-based Delta's New York-to-Florida backyard. (Song may soon face an additional competitor in a planned low-fare entry from UAL Corp.'s United Air Lines Inc.)

Song is using a common-sense blend of technology and people power to drive costs down and revenue up, while functioning as a pilot project for the greater Delta operation.

High-Tech Package

Song is targeted at cost-conscious leisure travelers, taking over routes from the defunct Delta Express, whose demise from cost overruns was partly tied to its low-volume, 119-seat 737-200 jets. Song flies to vacation destinations, so far mostly in Florida, using a fleet of 199-seat 757s. (Adding a 200th seat would have required an additional flight attendant.)

Song took off on April 15, but it's still shaking out and gearing up its operations. It plans to entice travelers with free seat-back digital television and will offer movies, cached Internet content for shopping (uploaded at the end of the flight), MP3 audio, and video games that can be played with other passengers — all for a price. It will also be the first airline to sell brand-name food, snacks and drinks and accept credit card payments in flight.

Unfortunately, the much-hyped entertainment won't begin being phased in until October, and it won't reach all

Delta's new 'all-digital' Song airline is a testbed for technology and productivity improvements. **By Kathleen Melymuka**



JOHN JACOBI says there's been no tug of war over technology between Delta and Song.

36 planes until March 2004. "A tough way to start — with a bunch of disappointed customers," says Mark Riseley, a Gartner Inc. analyst who studies the low-cost airline industry. To counter-balance that, he says, Song needs to lead on price and service, and that's where its ability to leverage Delta technology can make a difference (see "The Delta Nervous System," next page).

"When the business decision was made to launch a new airline, resources came from all over: applications, middleware, engineering, field services. We all rallied," says John Jacobi, vice president of customer systems at the airline's information services arm, Delta Technology Inc. "Song is just as important" to Delta Technology as Delta's main line is, he noted.

The result is an impressive package of technology — from kiosks to bar-coded boarding passes — to cut costs, improve service and boost productivity.

Quick boarding is the key to one of the biggest cost-saving innovations at Song: the 50-minute turn. (A turn is the time it takes to discharge passengers and baggage; clean the plane; take on new passengers, baggage and supplies; and be ready for take-off.) "The biggest deal from an efficiency standpoint is to keep the airplanes flying," says Joe Serratelli, vice president for productivity at Song. "That's how companies drive revenue."

Southwest achieved its envied cost structure partly as a result of turning its 737s in 20 minutes. Song's 50-minute turn is enabled by proprietary technology in the air as well as creative use of technology on the ground. For example, at Song, the gate information screens double as movie screens

Delta's IT TEST PILOT

Song's Tech Tune

Technology is helping Song cut costs, improve service and boost productivity by offering the following features:

- **A dedicated Web site** (www.flysong.com) that assists customers in finding the lowest fares, buying tickets, checking in and printing boarding passes at home
- **Kiosks** for automated check-in from the airport
- **An automated voice response phone service** (coming later this year) that will enable customers to find a flight and book a ticket without human intervention
- **Bar-coded boarding passes** that facilitate boarding and reassignment of passengers in the event of a flight cancellation
- **Gate information displays** to update passengers on flights, stand-by or upgrade status, and weather at the destination, or to redirect them in case of a gate change or cancellation

for mock horror films like *The Thing That Wouldn't Get Out of the Aisle*. "People chuckle, but they learn something about how to board more efficiently, and we pick up a couple precious moments there," says Serratelli. As a result, Song's aircraft spend 23% more time in the air than counterparts in Delta's main line.

Although Song and Delta share technology resources, Jacobi says there's no tug of war because Delta sees Song as a testbed for new ideas. "Things that work can easily be scaled for Delta," explains Joanne Smith, vice president of marketing and customers at Song, adding that the 50-minute turn is already being considered for adoption by the larger Delta.

Technology can help to keep a lid on costs, but it takes more to make a successful airline, Riseley says. "The low-cost airline industry is not just about delivering to-the-bone cost; it's decent service at to-the-bone cost," he explains. "The customer expectation is 'cheap and cheerful,' and there's got to be equal emphasis on both."

For example, he says that self-service check-in will make a significant dif-

ference — if people use it. "But there is a hand-holding part of the process where you have to get people used to the machines," Riseley says.

Song understands that and has heavily integrated people and technology in airport lobbies. "If you just throw kiosks out there and hope people will find and love them, that doesn't work," Serratelli says. "It works better if employees are there in the lobby as meeters and greeters, directing people."

This approach has helped Song exceed its goal of 80% alternative check-in at some airports, he says.

Song isn't afraid to use less-sexy technology when it makes sense. "The age-old problem for airports is pockets of time where we're not busy and others where we're getting clobbered [with crowds]. But you've got fixed staffing," says Serratelli. Delta and Song have addressed that problem in some airports with banks of phones connected directly to reservations agents who can help customers check in or change itineraries without waiting at the counter. The result, he says, is "fewer [customers] standing in line, and we don't need to have as many people on the front end."

People are the one cost that could scuttle Song despite its technology, Riseley says. Because Song has hired from within Delta, it has the same personnel costs as the larger airline and won't have a cost-cutting culture built in from the beginning, as a true start-up could. "Keeping costs low is not just a recipe you follow," he says. "It's about a philosophy of cost control, and that has to apply right across the business and across the staff you hire."

Tech Competition

Whether technology can make enough difference to keep Song in the air is difficult to answer. Delta won't divulge how much it saves on Web reservations and technology-enabled check-in vs. person-to-person transactions. But Riseley says a reservation done via a private Web site can save \$4 per trip segment (takeoff and landing) over one done through a global reservation system, and an e-ticket saves about \$5. Trouble is, these technologies are quickly becoming standard. "There's a lot of that in travel already," he says, so they won't offer much of an advantage over rivals.

How much revenue can be gained through in-flight sales and digital entertainment is still unknown, but Riseley notes that Ryanair.com Ltd., a low-cost airline in the U.K., derives 10% of

When the business decision was made to launch a new airline, resources came from all over: applications, middleware, engineering, field services. We all rallied.

JOHN JACOBI, VICE PRESIDENT OF CUSTOMER SYSTEMS, DELTA TECHNOLOGY INC.

its operating revenue from hawking goods and services during flights. "So there is a potential for ancillary revenue to be important," he says.

Song is also planning to give business partners such as American Express Co. a shot at its captive digital audience for a fee.

Song's onboard technology promises to be fun. Whether it will draw travelers is yet to be seen. Its cost-cutting

technologies, for the most part, aren't unique, but they are comprehensive. Its revenue-enhancing schemes seem like drops in the bucket, but at low-cost airlines, every dollar counts. Its personnel costs are a big challenge, but with the smart use of technology, Song seems to be providing good service with fewer people.

Whether Song can succeed may depend on how you define success. "Stand-alone profitability is not the only way to measure success in this venture," said analyst Gary Chase in a recent equity research report for Lehman Brothers Holdings Inc. "The true barometer of success will be its impact on JetBlue."

"Song is a defensive move," Riseley agrees. "If it maintains Delta's overall market position and stops JetBlue's advance, that may be enough." ▀

Melymuka is a Computerworld contributing writer. You can contact her at kmelymuka@yahoo.com.

The Delta Nervous System

Song starts with a leg up on the competition through its connection to Delta's digital infrastructure, known as the Delta Nervous System (DNS). Developed by the airline's information services arm, Delta Technology, the DNS receives, stores, organizes, synchronizes and distributes all the data that's essential to running the airline.

DNS communicates information in real time about thousands of daily "events," ranging from a ticket purchase or boarding-pass scan to a change in gate or arrival time. It does this through a series of layers that support different functions:

■ **The device services layer**, closest to the customer, records events and updates information. Components include reservations workstations and boarding-pass scanners.

■ **In the next layer, information delivery channels** tailor the format of the data to suit the device on which it's displayed, from a workstation to a gate-side passenger information screen.

■ **Common application services** allow application developers to create new software quickly and easily with reusable tools and processes.

■ **The data broker layer** retrieves bits of data from enterprise databases, assembles it into packages designed for the business context in which the information

will be used and ensures that requesters are authorized to see it.

■ **For data storage**, Delta uses software from Oracle Corp. on Hewlett-Packard Co. Unix N-class servers for data specific to particular business applications. It uses DB2 on IBM mainframes as the central repository for operational data such as schedules, flights, passenger bookings, customer data, tickets and seat inventory. Teradata software on an NCR Corp. system manages the corporate data warehouse, where information is summarized for trend analysis and forecasting.

IBM mainframes running the Transaction Processing Facility (TPF) operating system, tailored for high-speed and high-volume transactions, manage operations and reservations systems. Other, non-TPF mainframe systems run on the OS/390 operating system.

The DNS uses middleware, including IBM's MQSeries products and Tibco Software Inc.'s Rendezvous, Business Works and Business Connect, to move data from system to system. Its home-grown integration platform can handle feeds of information as diverse as mainframe TPF transactions, business applications and external messaging from business partners.

— Kathleen Melymuka

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ONE OF THE BIGGEST MYTHS about CRM is the idea that any company can embrace it and expect results. Well, that's like thinking anyone can run the New York Marathon.

Depending on your physical readiness (in terms of weight, training and endurance), you could be months or years away from even entering, let alone completing, the race. Similarly, a minimum "organizational readiness rating" (in terms of customer, process and systems maturity) must be in place for CRM to happen successfully.

Since CRM is about identifying, retaining and increasing the profitability of your best customers, something every business under the sun ultimately wants to do, it seems like the last question you'd want to ask is whether CRM is for you. Unfortunately, because you have only a one in five chance of success, and simply attempting the feat will cost \$5 to \$15,000 per user per year, you want to be very sure you can answer this question.

You should be looking at CRM only if you have a large number of customers (say, more than 5,000), the typical customer is worth a lot in terms of

profits, and you have a large sales staff trying to sell complex, customized products in multiple channels (see quiz, next page). If not, then the costs and disruption that CRM entails won't be worth the benefits, and you should look to process improvements and simpler tools like contact managers or Web-based application services.

The key to CRM success is to analyze your company's maturity in four areas: customer focus, process, systems and people.

KNOWLEDGE CENTER



Customer Maturity

Most companies have a very good idea of what it costs to build and ship a product or create a service and the overall revenue generated. But a customer-focused company wants to know the following:

■ **Who is likely to buy a given product or service?** The answer would enable us to

target prospects with a similar profile and convert them to customers.

■ **Why do customers leave for the competition?** The answers would enable us to fix the associated problems and to identify other customers facing similar issues and prevent them from possibly leaving as well.

■ **How do customers actually use a product**

CRM: Ready Or Not?

Book Excerpt: Figure out your 'organizational readiness rating' before starting a CRM project. By Michael Gentle

or service, and what's the nature of their interactions with the company? The answers would enable us to identify opportunities for cross-selling and upselling.

Customer maturity is therefore a measure of how far a company has evolved from a product-based model (moving products out the door at minimum cost) to a customer-based model (who's buying our products, why do they like us, how can we measure satisfaction, why do they leave, and how can we sell them more?).

Companies with a high level of customer maturity try to identify the most profitable customers, quickly answer customer questions and even talk to ex-customers to figure out why they left. These are steppingstones to CRM and could result in IT systems such as a data warehouse, sales force automation, a marketing information system and a one-stop call center.

But each of those evolutionary steps can take six months to two years or more and cost millions of dollars in the process. So the higher the level of customer maturity, the lower the barriers on the road to CRM.

Process Maturity

The ease with which CRM tools and technology can be absorbed into the enterprise is directly dependent on how mature the processes are in the customer-facing functions of sales, marketing and customer service.

Consider the field of software engineering, where it became readily apparent that the ability of an IT organization to absorb computer-aided software engineering tools was directly dependent on the IT department's process maturity. This led to the famous process maturity levels defined by Watts Humphrey of the Software Engineering Institute:

■ **Level 1:** Processes are "anything goes" and lack even rudimentary predictability of schedules and costs.

■ **Level 2:** Processes are stable and repeatable. There's rigorous management of commitments, costs, schedules and changes.

■ **Level 3:** The organization has defined the methodology and can consistently apply it with standard metrics. At this point, advanced technology can usefully be introduced.

■ **Level 4:** The organization now has a foundation for continuing process improvement.

It doesn't take much imagination to see that those maturity levels could apply equally well to processes like sales, marketing and customer service. Customer service and order management

departments are by definition process-oriented. Sales and marketing departments, however, are notorious for their lack of process. It's routine for marketing departments to have little or no idea of campaign effectiveness. As for sales reps, they're inherently individualistic and averse to rules — what counts is closing the deal; the "how" is secondary. Between first contact with a prospect and the closing of a deal, black magic is alive and well! So this is an enormous opportunity to improve sales and marketing processes.

A maturing sales and marketing department is focused on metrics such as the sales lead-to-close ratio and the sales cycle duration. Such metrics are inextricably linked to CRM and could result in IT systems such as sales force automation, an order configurator and interfaces between systems to eliminate the rekeying of information.

Companies not yet at the repeatable process stage will find it extremely difficult, if not impossible, to implement CRM software, for the simple reason that there are no processes to automate! Instead of jumping into the deep end of CRM, they should instead concentrate on defining their basic processes and gradually automating those processes.

Systems Maturity

Systems tend to resemble the organizations that build them.

Conway's Law

Systems maturity is a measure of how far a company's systems have evolved to reflect its level of customer and process

maturity. The most important measurement of systems maturity is the evolution from islands of automation to integrated systems that share and pass information across functional boundaries.

A company with a low level of systems maturity would have completely disparate systems — and no information-sharing — for sales, orders, delivery, billing and customer service. An intermediate level of maturity would have interfaces between some of those systems, some information-sharing and a partial view of the customer's life cycle activity.

At the highest level of maturity, there's full information-sharing and a full view of the customer and interfaces to back-office systems. Plus, decision support becomes part of the landscape, with transactional data consolidated to form a data warehouse (and possibly spin-off data marts).

The growth in systems maturity is a long-term process, with key interfaces and a data warehouse taking up to two



The CRM Readiness Quiz

Test your company's maturity to see if it's prepared for a CRM project.

PART 1: SHOULD YOU EVEN CONSIDER CRM?

YES or NO

- Do you have a large number of people (more than 30) in sales and service in direct contact with customers?
- Are you in a highly collaborative environment, with customer interaction requiring input from multiple players in sales and service?
- Do you sell complex products that require a high degree of configuration and customization?
- Do you have a large number of customers (more than 5,000)?
- Is a typical customer relationship worth a lot to you from a profit standpoint (will it cost you a lot to lose one)?
- Can your customers interact with you across multiple channels?
- Do you have frequent contact with large groups of customers, or all customers, across multiple channels?
- Do you need to customize what you're saying to each customer through these channels?

Scoring: If you have three or fewer yes answers, your company isn't a candidate for CRM. Instead, consider simple tools like contact managers or Web-based applications, and fix the business processes. If you have four or more yes answers, then score one point and continue.

SCORING:

- **7 points or fewer:** Your company isn't ready for CRM. Concentrate on process improvement and simple tools like contact management software or Web-based applications.
- **8-14 points:** Your company is ready for CRM, but much more work remains over the next 12 to 36 months before CRM will yield tangible benefits.
- **15-21 points:** This is a rare occurrence! Your company is ready for CRM because of a sufficiently high level of maturity in terms of customers, processes, systems and people. CRM is a logical extension of what you already do and will yield benefits in as little as 12 to 24 months.

years or more to accomplish. But these are the building blocks for CRM.

People Maturity

Last but not least, let's not forget about people, without whom no process or system is going to work anyway. People aren't going to spontaneously embrace CRM; they have to be motivated to do so.

Students of psychology and motivation know about Maslow's triangle, which explains how motivation is based on personal and environmental prerequisites, called the "hierarchy of needs." You can't ask people to embrace concepts like achievement and status (esteem) if they haven't got the basic prerequisites of food and shelter (physiological). Similarly, it would be a

mistake to assume that people will be naturally motivated to embrace CRM just because it makes sense and is good for the customer and the company. Certain personal and environmental prerequisites will also therefore apply.

In the CRM hierarchy of needs, people will be more likely to be motivated to take up CRM if their job descriptions are relevant to it. This would then be made even easier if they're generally satisfied with their careers, benefit from a good working environment and don't have to worry about losing their jobs.

In practice, the biggest problems with CRM motivation are caused by bolting CRM responsibilities onto existing jobs without redefining performance and pay. Think of call center agents whose performance criteria are rarely linked

PART 2: RATE YOUR MATURITY LEVELS

SCORE

- **Customer maturity:** Is the same unique customer identifier (real or cross-referenced) used in at least two of the following systems: sales, ordering, billing, customer service? **Yes = 2 points**
- **Process maturity:** Do you have repeatable processes in the following functional areas?
 - Marketing: **Yes = 2 points**
 - Sales: **Yes = 3 points**
 - Order management: **Yes = 1 point**
 - Billing: **Yes = 1 point**
 - Customer service: **Yes = 1 point**

Add the points and enter the total in the box.

Systems maturity:

Do you have a data warehouse that consolidates information about customers and products? **Yes = 3 points**

Do you have an automatic interface between sales and order management (no double entry)? **Yes = 2 points**

Do you have an automatic interface (no double entry) between customer service and at least one of the following systems: sales, order management, billing? **Yes = 2 points**

Add the points and enter the total in the box.

- **People maturity:** Are your people sufficiently motivated to embrace CRM concepts and tools because they're relevant to their jobs? **Yes = 3 points**

- **Start-ups:** Is your company in start-up mode or less than two years old? **Yes = -5 (subtract 5 points)**

Scoring: Add the scores from Part 2, plus the one point from Part 1, and enter the total here.

to real customer satisfaction, but to throughput based on routine tasks with little intellectual challenge. A company will spend millions of dollars implementing a CRM system, then put it in front of call center agents earning minimum wage whose performance criteria is based on call quantity rather than quality. Another example is in sales, where it's difficult to get top-performing salespeople to buy into CRM when they associate it with de-skilling their jobs and helping their managers look over their shoulders and give away the best bits of their territories to others.

It's not sufficient for a company at the executive level to buy into CRM, then preach the gospel to the rest of the people and expect them to embrace it, too. People will only buy into

CRM when they're motivated to do so and when they've been properly trained to feel comfortable with it.

While CRM can indeed be for everyone, there are many prerequisites that usually take a few years to achieve. So ensure that your company first learns to walk before it attempts to run. ▀

Reprinted with permission from The CRM Project Management Handbook, by Michael Gentle (Kogan Page Ltd., 2002). Gentle is an international CRM consultant based in Paris.

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DON'T PANIC, Push Back

Worried about a visit from the vendor's software police? Remember: Software audits are negotiable. By Julia King

SHEER, UNADULTERATED PANIC. That's typically an IT manager's first response to receiving notice of an impending audit, in which a software vendor evaluates whether the user is complying with a software license.

It's also exactly the wrong response, one that almost guarantees repeat audits or threats of audits in the years ahead, experts say.

"What a lot of companies that panic do — and this is the worst thing you can do — is just pay, and that payment can be 150% of the original license fee," says Pat Cicala, president and CEO of Cicala & Associates LLC in Hoboken, N.J. "These same companies then over-license for insurance so it will never happen again. These are the same companies that repetitively are targeted for audits."

A far better strategy is to push back and push back hard. That's what Scott Robinson, chief technology officer at Portland Public Schools in Oregon, did after getting an audit letter from Microsoft Corp. in March 2002. The letter, which arrived at the school district's busiest time of year, gave Robin-

son 60 days to complete an audit. The cost of compliance and the audit would equal the cost of 10 teaching positions, Robinson says. It would also be nearly impossible to document many of the district's 20,000 devices scattered across 125 buildings, because about 6,000 of the machines were do-

nated. Robinson responded quickly and decisively.

"I told them I'll unplug every device [running Microsoft] and reimage it with Linux and bring it back online," he recalls. "They didn't believe me." But after Robinson proceeded to convert five school computer labs, each with 30 machines, to Linux, "we garnered the attention of the vice president of Microsoft's education segment," he says.

LICENSING

FAST FACTS

70% of businesses consider themselves as being at high risk for noncompliance with software licenses.

54% admit that they'd find it difficult to prove ownership of all the software they have installed.

BASE: Survey of 2,500 businesses of all sizes

SOURCE: TENAX INC., RICHMOND, VA.

Ultimately, Microsoft backed down and even invited Robinson to speak on audits and customer relations at a conference for its salespeople.

"It's not that we don't want to be compliant," Robinson says. "It's just that it should be about working with the customer to ensure compliancy, rather than just demanding it."

Mark Paris, director of information systems at Kleinfelder Inc., a San Diego-based construction management and engineering services company, negotiated his way out of a software audit proposed by Oracle Corp. The vendor had lumped together three or four reasons for an audit, including Kleinfelder's growth as a company and its distribution of Oracle reports to internal users not licensed on the software. Oracle also suggested to Paris that it was in Kleinfelder's best interest to change to a different, more expensive software licensing model.

But Paris balked and insisted on addressing each of the vendor's issues individually. "Their goal is to have you look at this huge thing and put fear in your heart. But when the whole football team is running at you at the same time, you have to take them on one at a time," he says.

For example, "on the growth issue, I agreed that we were growing, but it didn't make sense to change licensing models just yet," he recalls. "I also dug my heels in on the reporting issue," which Oracle's legal department ultimately dropped. In the end, Paris says, "when we dealt with the issues individually, there was no reason on Oracle's behalf to pursue its strong-arm tactic of pursuing an audit."

Still, generally speaking, companies should expect and plan for software vendors to exercise their audit rights more aggressively and more frequently, warns Jane Disbrow, an analyst at Gartner Inc.

"Part of the reason is the downturn in the economy. If you're out selling a lot of new products, you don't have time to do audits. If you're not making revenue, the best thing vendors can do is see if they can get revenue by making sure current customers are living up to licensing agreements," she says.

If an audit is inevitable, Disbrow advises companies to designate key personnel who know about business, licensing, security and technical issues to deal with all vendor audit requests. This cross-functional team should include representatives from the IT, pro-

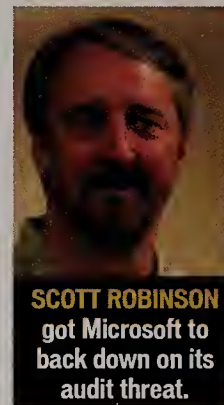
curement, legal and internal audit departments who can gather all internal data on license deployment and determine upfront the minimum security safeguards necessary before allowing third-party access.

Experts agree that the best way to deal with a software audit or even the threat of one is to have a good asset management program, which works to dissuade vendors from targeting your company in the first place.

"A good program is one that includes policies, procedures and disciplinary standards; ongoing training; ongoing user awareness; methods to prevent illegal activity, such as monitoring, filtering or other technical measures; and making sure that all

users sign off on that policy," says Donna Johnson Edwards, a consultant at Tenax Inc., a Richmond, Va.-based company specializing in IT compliance and asset management.

In contrast, she says, "a lame program is a company handbook that gets handed to the employee when they're hired and never gets revisited." ▀



SCOTT ROBINSON got Microsoft to back down on its audit threat.

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WHEN PUSH COMES TO SHOVE

Tips for surviving a software audit (or the threat of one):

- Push back. Immediately begin assembling your case for why an audit is unwarranted.
- Negotiate all issues individually.
- Designate a specialized team to deal with all vendor requests.
- Check with all administrators for registration certificates, paper licenses and documentation that may be stashed in file cabinets and drawers scattered throughout the company.
- Check with your reseller, which is typically responsible for keeping records of all software licenses distributed to its customers.
- Establish upfront minimum security standards and safeguards before allowing third-party access to your systems.
- Insist that the vendor pay for the audit.
- Get legal advice as necessary.

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NEWSMAKER



Since the Sept. 11 attacks, the New York Board of Trade has been working out of its backup facility. But next month, it will move into a state-of-the-art trading floor in Long Island City, Queens, designed

by consultancy Business Technology Partners Inc. in New York. For the past six years, CEO JOSHUA AARON and his firm have been providing virtual CTO teams that execute myriad network, systems and software projects for companies that need to pick up and move their IT operations. Aaron spoke with *Computerworld's* Jean Consilvio about what he's learned over the years.

Can you give some tips for successful IT relocation? It's one of those adages where every hour's worth of planning can save hundreds of thousands of dollars. You should conduct a thorough needs analysis upfront. Don't be afraid to bring on the resources a company needs to complete that.

■ If you take on a major relocation project, it's very large and extra to [an IT staff's] normal job responsibilities, plus it isn't something they do every day. It's better to bring in help from qualified professionals.

■ Get your communications lines and circuit orders in early so they can be identified. One of the longest lead items in relocating is WAN and public switch telephone connectivity for new offices.

■ Make sure that someone from your [IT] team is on-site every day during construction to make sure things are being built out the way you want them to be.

What are the biggest mistakes? A lot of times [companies] don't do an adequate job upfront of meeting with their business end users and getting all their requirements documented so they can plan the project. They wind up making too many changes during the construction period... and costs start to spiral. Also, not identifying long lead-time items upfront, including mechanical systems for supplemental cooling and air conditioning for technology rooms, or backup power supplies. And probably the biggest mistake is not providing enough end-user training and setting the proper expectations about their new environment.

ALAN MACCORMACK

The True Costs Of Software

HOW MUCH DOES "free" software really cost? That question remains at the heart of decisions made by CIOs and other technology leaders trying to decide on the software and associated hardware that will lead them into the future.

Advocates of Linux and other open-source products sometimes argue that because the software is distrib-

uted free of charge, it's self-evident that it's more financially attractive than proprietary products from companies like Microsoft, IBM, SAP or Oracle. IBM, which is increasingly pushing its support of Linux, suggests that a consensus is emerging that the total cost of ownership (TCO) of Linux is significantly lower than similar costs for competing proprietary operating systems (although it doesn't appear to extend this argument to other open-source software that competes with its own revenue-producing software).

Journalistic accounts of the spread of open-source also tend to assume that the price difference is a critical competitive advantage. "Because it is free," declared a recent *Business Week* cover story, "Linux is undercutting Microsoft much the way Microsoft has gutted its rivals with lower prices for the past two decades." Yet anyone who looks into the problem of measuring the TCO of software quickly recognizes how murky this field can be. "Free," it turns out, doesn't necessarily mean cheaper.

To assess the merits of these various claims, I recently reviewed a large sample of publicly available articles that purported to address the TCO of different server operating systems.



ALAN MACCORMACK is an associate professor of business administration at Harvard Business School. He can be reached at amaccormack@hbs.edu.

The first fact to emerge was that most of the 84 different documents I reviewed couldn't even be considered studies — they didn't capture sufficient data on the full range of costs needed to evaluate TCO, and they often based their conclusions on the analysis of results from only a single company's experiences. Yet the handful of studies that were more comprehensive revealed that the issues sur-

rounding software TCO are more complex than is typically portrayed.

To begin with, it appears that the price of software itself — whether it's free or not — is so low relative to the TCO that it may have little impact on the outcome of IT investment decisions for many purchasers. In most cases, the price of software proved to be less than 10% of the TCO.

Where costs do become significant for all types of software is in the level of staffing needed. By staffing, I mean the training, maintenance, support, administration and other personnel costs necessary to run the software package efficiently. These costs can add up to as much as 50% to 70% of a software system's TCO over its useful life.

Yet even staffing costs vary greatly depending on what type of workload is placed on the software and what

sort of tools the software provides for users. For example, one study that compared the TCO of Windows and Linux for different server workloads found that the Microsoft product's TCO was lower for networking applications but more expensive for Web-serving applications. In sum, how a company uses its software tells you a lot more about TCO than the sticker price.

The fact that people use software in different ways also points to one of the problems in using a simple TCO analysis to make purchasing decisions. Too often, it's assumed that the software packages being compared provide essentially the same sets of benefits to users. But specific products and features that are vital to some users will obviously increase a particular software package's value relative to other packages. Furthermore, a software package that provides more applications and choices for users brings with it additional, often unmeasured, value. A CIO must therefore be careful to examine the differences in both cost and value to make an effective investment decision for any type of software platform.

A company must understand what it expects from its software as it weighs the decision about whether to embrace open-source. Fortunately, more companies are approaching the TCO issue in this way. Instead of just looking at the price of software, they're doing thorough, company-specific examinations of how the software will be used, by whom and for what purpose. Those sorts of questions ought to bring a CIO much closer to what his true costs are — and deliver a healthy dose of realism to the debate about "free" software. ▀

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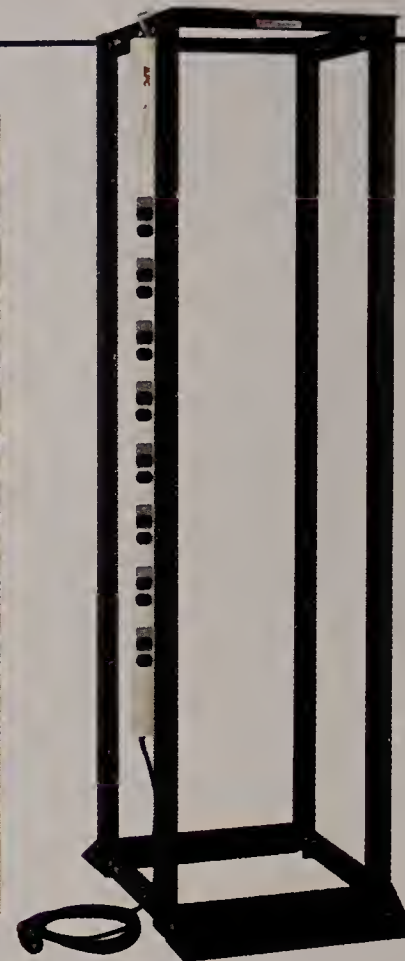
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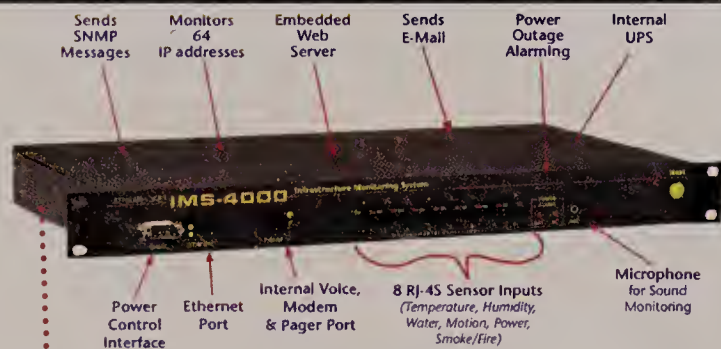


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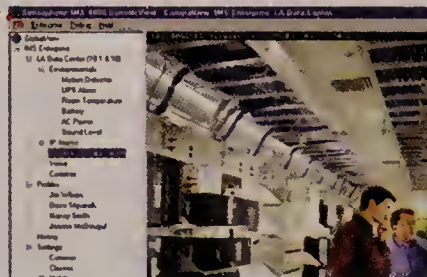
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Company engaged in the dev. of global portfolio mgmt, trading and compliance s/w seeks a Product Specialist/Business Analyst to utilize sophisticated understanding of bus. and finance as well as knowledge of financial s/w common to the industry including Reuters, Bloomberg, Market Guide and First Call to test co. s/w products from an end-user perspective. Heavy interaction with clients and devlpmnt. of specs for new product features. Manually test features within the context of trading workflows and work with customers in the finance and trade industry to elicit feedback on features' functionality and quality. Duties also include support of in-house Acct Implementation Mgmt, Development & Technical Support teams and providing bus. level support on complex issues. Salary in \$82,000/yr. F-T (40 hrs/wk) Min Req: No exp necessary. Masters in Finance or related and knowledge of financial s/w applications common to the industry including Reuters, Bloomberg First Call, and Market Guide required. Please respond with two (2) copies of your resume to Case # 200202660, Labor Exchange Office, 19 Staniford St., 1st FL, Boston, MA 02114.

Market Research Analyst

Research market conditions for computer sales and consultancy firm. Determine potential sales of products and services. Gather information on marketing methods and distribution, price and sales. Liaison with foreign government officials in Nigeria and Sierra Leone to obtain information. 40 hrs/wk, no OT., 11 months experience in above. Send resume to Quest Corporation, 512 East Jefferson St., Fort Wayne, IN 46802. No Phone Calls.

Software Engineers to design, develop, test wireless/web software systems & services for devices including WAP Phone, Pocket PC's, etc. using Java, JSP, VB, VBA, SQL, Web Servers, Weblogic, HTML, MS Access and WCTP under Windows, UNIX OS; perform req analysis to determine tech. feasibility; study/evaluate new tech./methodologies; provide guidance for complex user problems. Require: M.S. in CS/Engg. (any branch). Competitive salary. F/T. Respond to: HR, Air2Web, Inc., 1230 Peachtree Street NE, Promenade II, 12th FL., Atlanta, GA 30309.

Nexus Innovative Solutions Co seeks Database Administrators to design, configure and manage Oracle Databases & Appln. Srvr on UNIX & Windows. Also responsible for Windows svr admin; building online learning (LMS) solutions by applying SME on eLearning sys & implementing SCORM, AICC, & HIPAA stds; maintaining clinical sys; monitoring HL7 message transmissions; Job in Chicago area. Requires BS or eqvnt in Comp Sci or Engg & 5 yrs exp in database admin and/or in s/ware dsgn & dvlpmt. Must have cert as Oracle DBA & NT Admin. Send resume to HR@nisc.com. Fax: (703) 385 4385.

Database Developer, Specialized Libraries: Design/manage marketing/market-research data gathering/storage libraries. Perform data manipulation to project market senerios using knowledge of market research methodologies. Provide data extraction, loading, structuring for specialized business data libraries. 8:30a-5:30p. Req: Bach Bus Admin in Economics/ Finance & 1 yr exp or as Tech MIS Coord &/or Web Developer. Resume: J. Stulb, Morris Communications, 699 Broad St, #800, Augusta, GA 30901

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SOFTWARE PROFESSIONALS Midrange Solutions Inc., a software consulting company, requires network engineers willing to relocated to the client job sites nationwide, to resolve problems regarding administration of AIX/ Unix servers/operating systems under supervision of technical director and client technical staff. Mail resume and salary req's to: Midrange Solutions Inc., 20 Hillside Ave., Springfield, NJ 07081.

Oracle Applications Developer: Design & develop Oracle Databases & Graphical user interface. Develop user interface using multiple web technologies for generating reports; Oracle Forms 6i, Reports 6i, PL/SQL, SQL Reports, Java Script 1.1, HTML, Pro C, Java and J2EE. Please send resumes to 101 Southhall Lane, Suite 220, Maitland, FL 32751.

Advansoft (Soft O Soft) is looking for program or system analysts, IT engineers. Candidate must have BS or equivalent. Exp. in IT area such as Oracle, Java, VB, WebSphere/Weblogic etc is plus. Travel maybe required for some position. Send resumes to: info@advansoft.com. EOE

E-Com has several system/programmer analyst and engineer positions. We are small but stable, offer attractive wage with full benefits. Consultants must have Bachelor degree with experience in SQL, Developer 2000, Oracle, Unix, Window NT. Please send resumes to e-com@prodigy.net

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Computer Consultants.

Should have a bachelor's degree in computer science/related field and 3.0 year experience with the following: Delphi, VB, CR8.5, SQL 2K, Oracle, ISAPI, VFP + MS Automation, Web Tech. We accept foreign education equivalent of the degree, or the degree equivalent in education and experience.

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Design, Test, Document and Update Software applications. Prefer a Bachelor's Degree or Foreign equivalent in a Business Or computer related field. Send resumes to:

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Engineers and Programmer/Analysts needed for Park City, IL based Software Company. Scogemini, Corp has several senior and midlevel positions available for qualified candidates possessing MS/BS or equivalent and/or relevant work experience. Work with 2 of the following: Java, Rational Suite, EJB, Apache, Documentum, Livelink, Siebel, Oracle, JD Edwards, PowerBuilder and XML. Send resumes to Scogemini Corp, Attn: HR, P.O.Box 7881, Gurnee, IL 60031

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Computer Consultant/ Programmer-Analyst

Provide technical assistance and expertise to clients in order to tailor software systems solutions to suit clients' unique needs; research efficient software systems involving entire system development life-cycle (analysis, program development, design, testing, debugging and implementation) for client applications; identify systems usage errors and instruct clients to correct such errors; prepare systems and user documentation and conduct user training; respond to customer concerns; provide technical expertise on software usage; prepare and maintain customer status reports. BS Comp. Sci., Eng. or MIS plus 5 years experience required.

Salary \$76,500. Must have proof of legal authority to work permanently in the U.S. on the date of application for this position. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O.#TX1696406. Ad Paid by an Equal Opportunity Employer.

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Transition Analyst (Boston, MA). Develop & implement IT solutions & software applications to support banking & related portfolio & equity trading activities. Analyze business requirements, systems requirements & overall architecture, recommending technology solutions to streamline & enhance of transition management processes & related back & middle office activities. Will apply API, SQL Server, Sybase, Oracle & Site Server technologies to calibrate relational databases & increase systems capabilities; use XML, Visual Basic & web scripting languages to develop new/retrofit existing applications; identify & migrate new software/applications, validate business req's; size & tune databases & guide teams on integration/database expansion activities. Min. req's: Bachelor's degree (or equivalent) in Computer Science or related engineering field, plus 3 yrs. of experience in the position offered or 3 years in position respon. for using software tools & applications (including Visual Basic, SQL Server, Oracle, & Sybase) to develop, enhance & support large-scale relational/legacy databases & systems. Must have unrestricted authorization to work in U.S. M-F, 9 a.m.-5 p.m., 40 hours per week. Salary: \$70,000 - \$125,000/yr. An EOE. Send 2 copies of resume to Case No. 200202517, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

Applications Developer (North Quincy, MA). Resp. for development, maintenance & enhancement of multi-platform (Open Systems, Client/Server, Mainframe) business applications utilized by High Net Worth Services division of a financial services provider. Develop Trust Accounting & Portfolio Management Systems such as Sungard's Global Plus in Unix. Use J2EE, EJB, Java Servlets, Weblogic 5.1 or higher, XML, JDBC JavaScript, JSP & HTML to develop web applications in N-tier environment. Min. req's: B.S. or equivalent in Comp. Sci. or Engineering or related field and 6 yrs. experience in job or 6 yrs. in related IT positions. 6 years of experience must include a min. of 2 yrs. exp. with Sungard's VISION & a min. of 2 yrs. exp. with UNIX(AIX). Must also possess proven knowledge of C/Korn Shell programming, MVS development & Relational Database Management. Hours: M-F, 9am - 5pm, 40 hrs/wk. Salary: \$90,460.90/yr. Must have unrestricted authorization to work in U.S. An EOE. Send 2 copies of resume to Case No. 200201328, Labor Exchange Office, 19 Staniford St., 1st Fl., Boston, MA 02114.

SOFTWARE ENGINEER Software engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in MapInfo, Autoplotter and Sapphire Application Server. Requirements: Bachelor's Degree or equivalent in Computer Science or related field and two years experience as a software engineer or computer programmer, knowledge of MapInfo, Autoplotter and Sapphire Application Server. Salary: \$66,000/year. Working Conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week, involves extensive travel and frequent relocation. Apply: Site Manager, Beaver County CareerLink, 2103 Ninth Ave., Beaver Falls, PA 15010, Job No. WEB347661.

Level 3 Communications is seeking a Configuration Management/Environment Team Leader for Broomfield, CO. Candidate will direct and supervise team of software engineers who will package developer's source code and create and maintain scripts using Unix Shell Scripting, Perl, Ant, DOS batch commands and windows installer programs to distribute and implement approved application software used by global fiber optic communications network, operating on both Unix and Windows platforms. These scripts will be deployed to development, testing and production environments. Team will package and deploy application software for NID (Network inventory database), Routing Engine, IMS (Inventory Management System), LMS (Location Management System), FMS (Fiber management system), and NextGen (Provisioning System). Team will use knowledge of Unix, iPlanet, Siteminder, Resonate and Weblogic Server to create and maintain platforms that the application s software are deployed to. Team will use knowledge of Java, C++, Oracle, PL/SQL, RPC, and client server technologies deployed on application and web servers on both Unix and Windows environments. Will manage and administer team who will use ClearDDTS change management tools to perform code audit for to insure code checked in is in synch with fixed ddt tickets, and change and retest as needed. Team will use Clearcase, CVS, RCS, VSS, to administer code repositories by creating branches, source code merges, and baseline labeling and naming conventions. Please email resumes to Renate.Dykman@level3.com. No phone calls please.

Software Engineer- Develop, create, modify computer syst/apps software, specialized utility programs. Analyze design databases within application area. Analyze user needs, develop software solutions using Graphical User Interface (GUI) and Internet Applications. Bachelor's Degree or foreign equivalent. Will accept 3 years of undergraduate study and 3 years of experience as computer professional in lieu of Bachelor's. Degree must be in one of several fields: CS/CA, Eng., Chem., Math, Physics, or scientific or business related field. Must have one year experience using combination of: WINDOWS 95/98/00/NT, UNIX, ORACLE, VISUAL C++, C, C++, POWERBUILDER, MFC, CRYSTAL REPORTS, VISUAL BASIC, COM/DCOM, CORBA. Extensive travel and frequent relocation required. \$65K/yr 40hrs/wk EEO/AAP/M/F/V/H Send resume to: Site Manager, Beaver Cty CareerLink, 2103 Ninth Ave, Beaver Falls, PA 15010-3957, Job Order No: WEB 348373

Software Engineer - Develop, create, modify computer syst/apps software, specialized utility programs. Analyze design databases within application area. Analyze user needs, develop software solutions using SAP, related software. Will accept Bachelor's Degree or foreign equiv or equiv combination of ed and exp. in one of several limited fields: CS/CA, Eng., Chem., Math, Physics, or scientific or business related field. Must have one year exp using SAP. Extensive travel frequent relocation requird. \$65K/yr 40hrs/wk EEO/AAP/M/F/V/H Send resume: Manager, Armstrong Cty CareerLink, 1270 North Water Street, PO Box 759, Kittanning, PA 16201-0759, Job Order No: WEB 348364

Software Engineer - Develop, create, modify computer syst/apps software and specialized utility programs. Analyze, design databases within application area. Analyze user needs, develop software solutions using Relational Database Management System (RDBMS) and related software. Bachelor's Degree or foreign equivalent. Will accept 3 years of undergraduate study and 3 years of experience as a computer professional in lieu of Bachelors. Degree must be in one of several limited fields: CS/CA, Eng., Chem., Math, Physics, or scientific or business related field. Must have 1 year of experience using one of the following: INFORMIX, ORACLE, FOX-PRO, SYBASE, SQL SERVER, PROGRESS. Extensive travel and frequent relocation required. \$65K/yr 40hrs/wk EEO/AAP/M/F/V/H. Send resume to: Site Admin, Greene County Team PA CareerLink, 4 West High St, Waynesburg, PA 15370-1324. Job Order No: WEB 348388

Software Engineer - Develop, create, modify computer syst/apps software, specialized utility programs. Analyze, design databases within an application area. Analyze user needs, develop software solutions using Siebel and related software. Bachelor's Degree or foreign equivalent. Will accept 3 years of undergraduate study and 3 years of experience as a computer professional in lieu of Bachelors. Degree must be in one of several limited fields: CS/CA, Eng., Chem., Math, Physics, or scientific or business related field. Must have one year of experience using: Siebel CRM and related software. Extensive travel and frequent relocation required. \$65K/yr 40hrs/wk EEO/AAP/M/F/V/H. Send resume to: McKeesport CareerLink, ATTN: ES Manager, 345 Fifth Ave, McKeesport, PA 15132-2600 Job Order No: WEB 348377

Software Engineer - Develop, create, modify computer syst/apps software, specialized utility programs. Analyze, design databases within application area. Analyze user needs, develop software solutions using Enterprise Resource Planning (ERP), related software. Bachelor's Degree or foreign equivalent. Will accept 3 years of undergraduate study and 3 years of experience as computer professional in lieu of Bachelors. Degree must be in one of several limited fields: CS/CA, Eng., Chem., Math, Physics, or scientific or business related field. Must have one year experience using one of the following: SAP, BAAN, PEO-PLESOFIT, ORACLE Applications/Financials/Manufacturing/HR. Extensive travel and frequent relocation required. \$65K/yr 40hrs/wk EEO/AAP/M/F/V/H. Send resume to: Fayette Cty CareerLink, ATTN: CareerLink Program Supervisor, 32 Iowa Street, Uniontown, PA 15401-3513, Job Order No: WEB 348394

Applied Solutions Architect

Req's bachelor's degree in computer science or engineering; 5 yrs exp as a Content Server Architect, Sr Architect or Technical Project Manager; & 2 yrs exp implementing full Content Server product suite, J2EE, IBM WebSphere & BEA System Weblogic. Email resume to: resumes@fatwire.com, ref ID# ASA001. EOE M/F/D/V

Software Engineer - Develop, create, modify computer syst/apps software, specialized utility programs. Analyze, design databases in application area. Analyze user needs, develop software solutions using Internet Applications and Internet Software. Bachelor's Degree or foreign equiv. Will accept 3 years undergraduate study and 3 years experience as computer professional in lieu of Bachelor's. Degree must be in one of several fields: CS/CA, Eng., Chem., Math, Physics, scientific or business related field or social sciences field. Must have one year experience using 2 of A and 1 of B, or 2 of A and 1 of C: A - ASP, HTML, CGI, PERL, MTS, IIS B - JAVA, JAVASCRIPT, JAVABEANS C - COLDFUSION, BROADVISION, ATG DYNAMO, NET DYNAMICS, WEBSHERE, FRONT PAGE. Extensive travel, frequent relocation required. \$65K/yr 40hrs/wk EEO/AAP/M/F/V/H. Send resume to: Manager, Butler Cty CareerLink, Pullman Commerce Cntr, 112 Hollywood Dr, Ste 101, Butler, PA 16001-5699, Job Order No: WEB 348389

SENIOR SYSTEMS ENGINEER to design, develop, test, implement, maintain and support network management systems and application software for the telecommunications industry using Java, C++, NetExpert (FrameWork/Tools), XML, CORBA, Command Line, SNMP, and TL1. Require: M.S. degree in Computer Science, an Engineering discipline, or a closely related field, with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Competitive Salary Offered, 8:00 am to 5:00 pm, M-F. Send resume to: Kenneth Miles, Vice-President, MSI Consulting, 6151 Powers Ferry Road, Suite 540, Atlanta, GA 30339. Attn: Job AB.

Software Engineer - Develop, create, modify computer syst/apps software, specialized utility programs. Analyze, design databases within application area. Analyze user needs, develop software solutions using UNIX and related software. Will accept Bachelor's Degree or foreign equivalent. or equivalent combination of education and experience, in one of several limited fields: CS/CA, Eng., Chem., Math, Physics, or scientific or business related field. Must have 3 years experience using HP-UX and SCO-UNIX. Extensive travel, frequent relocation required. \$65K/yr 40hrs/wk EEO/AAP/M/F/V/H. Send resume to: BECS/CareerLink Program Supervisor, Indiana Cty CareerLink, 300 Indian Springs Road, Indiana, PA 15701, Job Order No: WEB 348384

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SOFTWARE ENGINEER to design and develop Web Services, Corba Services and clients applications for Order and Rodeo services using Java, EJB, WebLogic, Orbix 2000, MQ Series, Visio, Jbuilder and Harvest under UNIX operating system. Require: M.S. degree in Computer Science/ Engineering, or a closely related field with two years of experience in the job offered. Extensive travel on assignment to various client sites within the U.S. is required. Competitive salary offered. Apply by resume to: Roz L. Alford, Principal, ASAP Staffing, LLC, 3885 Holcomb Bridge Road, Norcross, GA 30092; Attn: Job SP.

SENIOR SYSTEMS ANALYST to analyze, design, develop and implement ERP and EDI applications using HTML, ASP, Visual Basic, SQL Plus and PL/SQL; Create SRS; Develop test scenarios and scripts, and coordinate system testing; Conduct impact analysis of new products, systems, upgrades and changes to EDI system; Train users on all new and upgraded systems. Require: Bachelor's degree in Computer Science, Business Administration, or a closely related field with 2 yrs of exp in the job offered. Competitive salary offered. Send resume to: Vinod Jain, India House Brass, Inc., 1900 Sigman Rd, Conyers, GA 30012; Attn: Job RS.



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Users

said no data was lost from Thursday's trading as a result of the blackout. "In addition, the Securities Industry Automation Corp., which is our data processing and technology operations arm, is operating at normal capacity on generator power," a spokeswoman said Thursday night.

Russ Lewis, CIO at GFI Group Inc., said the Wall Street-based online brokerage took a "hard hit around 4:12 p.m. . . and we went right into disaster recovery mode."

"All the systems did come down. We immediately went on generator backup for both our data center and our trading floor," Lewis said Friday morning. "Our systems all flipped over as well. Asia and London were unaffected because the systems flipped over properly."

As a precautionary measure, Lewis said, he performed end-of-week backups Thursday night and sent them via the company's virtual private network to London, "in case we weren't able to get power into the New York office today and

we had to shut the office down."

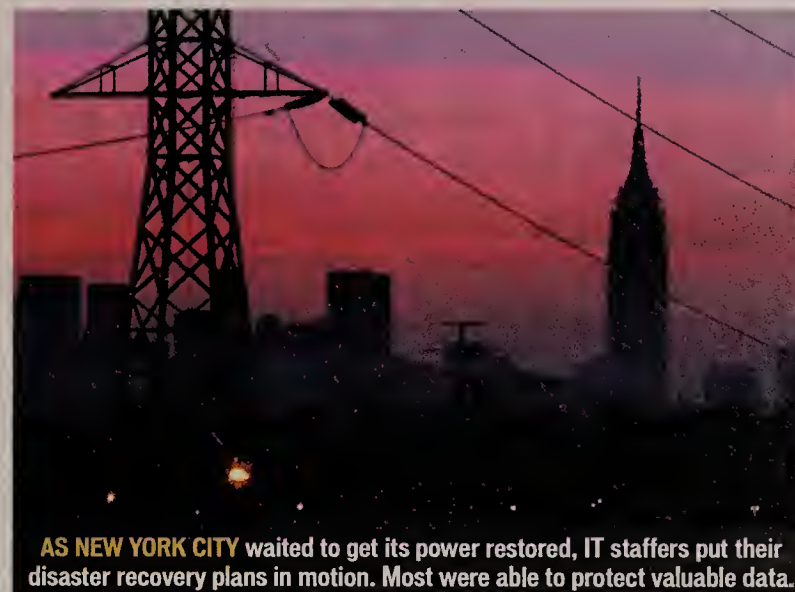
Lari Sue Taylor, director of enterprise information security and recovery at FleetBoston Financial Corp. in New York, said a 62-member crisis management team that was created after 9/11 began assessing the situation within an hour of the initial blackout.

FleetBoston, which has several offices in Manhattan, was forced to move workers to SunGard Data Systems Inc.'s facilities in Carlstadt, N.J. Taylor said the bank also had to transfer network operations for its Quick & Reilly online brokerage service to those facilities.

Diesel generators at Merrill Lynch & Co. in lower Manhattan revved up as the power went out, and computer systems in the Manhattan and New Jersey data centers didn't skip a beat, said spokeswoman Selena Morris.

"We were obviously prepared if something like this happens," Morris said.

At Case Western Reserve University in Cleveland Friday morning, CIO Lev Gonick was running on two hours' sleep after having worked on recovering core systems, including



AS NEW YORK CITY waited to get its power restored, IT staffers put their disaster recovery plans in motion. Most were able to protect valuable data.

e-mail, course management systems and enterprise systems, throughout the night.

Power was still out Friday morning, and nearly 1,000 students were due to move into the university for the new school year on Saturday.

Gonick said school officials were "desperately concerned" about losing data on returning students' tuition payments and course information, but a storage-area network Gonick implemented after Sept. 11 took automatic snapshots of data sets as the power began flickering at 4:07 p.m. EDT on Aug. 14. He said on Friday that

he lost only a "fraction of a second" worth of data.

"When we got hit, we got hit with a double surge. It was on the second surge that some backplanes and some network routers got hit pretty badly. We also think the second surge may have hurt some of our large servers as well," Gonick said. "We've got a couple of servers that are a bit cranky coming up. As soon as the system came up, we had to go back and match the last save. It's not been flawless. But it's been as close as I can imagine."

Similarly, Alan Winchester, a technology attorney at Har-

ris Beach LLP in New York, said all of the law firm's financial records are replicated in real time to its Rochester, N.Y., office, which has a generator.

Winchester said disaster recovery lessons learned after Sept. 11 were quickly implemented at Harris Beach after the lights went out.

IT staff members left the building with backup tapes for Tuesday through Friday, he said. "We can always restore it if something crazy happens to the building," he noted. "We can also restore it if we need to get the information to a server in a part of the country that's not affected." The law firm has offices in several other locations, including Washington and California, as well as connections with other law firms that would help if needed, Winchester said.

FedEx Corp. said the lack of power at its hubs and stations in the blackout areas delayed the processing of package information because drivers couldn't download data from bar-code scanners into the FedEx network. ▀

Bob Brewin, Linda Rosencrance and Todd R. Weiss contributed to this story.

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Systems

Out of First Energy's 4.3 million customers, 1.5 million were affected by the blackout.

Jamshidi added that the stability of the grid is unlikely to improve unless industry and the government invest more time and money in developing advanced software that can serve as a real-time decision-support system for electric grid managers and operators.

"There needs to be a more concentrated and cooperative approach at the federal level. Otherwise, these kinds of failures will continue to be difficult to predict," he said.

Mark Ascolese, president of Powerware Corp., a Raleigh, N.C.-based firm that manufactures power management software for the energy industry, agreed that lack of investment in the right technologies has contributed to the U.S. power grid's poor state of health.

"What's not been invested in during the last 40 years is the infrastructure for transmission and distribution, including the hardware and software that power SCADA systems," he said, referring to Supervisory Control and Data Acquisition Systems, which are real-time computers used to manage grid capacity.

Joe Weiss, an analyst at Kema Consulting in Fairfax,

Va., and former technical manager of the Enterprise Infrastructure Security Program at the Electric Power Research Institute in Palo Alto, Calif., said the situation caused by the badly outdated technologies is compounded by the highly interconnected nature of the grid, which makes such widespread cascading failures an ever-present possibility.

Paper Solutions

Weiss also acknowledged that much of the research and development work in more resilient IT systems for the electric power grid — such as the "intelligent grid" initiative called for last year by the National Research Council —

haven't made their way into operation to the extent officials would like.

Howard Schmidt, chief security officer at eBay Inc. and former chairman of the President's Critical Infrastructure Protection Board, championed the R&D effort in security systems capable of operating in the real-time environment of the electric grid. He said IT systems capable of providing an adequate amount of security and reliability for the nation's power grid don't yet exist and that their development is one of the most pressing issues facing the homeland security and R&D communities.

"There's better security at some e-commerce sites than

there is on some of our electric grid systems," said Schmidt.

And IT security has taken on new meaning for the energy industry in light of last week's failure, said Schmidt and other industry experts.

Jamshidi agreed with Schmidt's assessment, calling the blackout the most realistic security drill possible, one that exposed serious weaknesses in the system, including the threat from deliberate physical and cyberattacks. "This could have been even more disastrous," said Jamshidi. "Clearly, a well-informed attacker with information on the strengths and weaknesses of the grid could cause a much more damaging outage." ▀

FRANK HAYES ■ FRANKLY SPEAKING

Better Than UCITA

IT'S FINALLY OVER. The backers of UCITA — the widely loathed software licensing law that would have handed software vendors all sorts of nasty control over software buyers — have given up on it. UCITA's sponsor, the National Conference of Commissioners on Uniform State Laws (NCCUSL), said this month that it will no longer push for UCITA's adoption by state legislatures [QuickLink 40484].

UCITA's opponents have won — but I'm not cheering. The bad news is that there's nothing better than UCITA to replace it with. There's still a hole in the law where UCITA was supposed to go.

And winning isn't the same as solving the problem.

Yes, the Uniform Computer Information Transaction Act (UCITA) is a lousy law. As enacted in Virginia and Maryland — the only two states that passed it — UCITA allows software vendors to change license terms at will without informing customers, disavow responsibility for bugs and even sabotage customers' systems if vendors believe their licenses are being violated.

No wonder Iowa, North Carolina, Vermont and West Virginia passed laws specifically protecting their citizens from UCITA. No wonder the American Bar Association and The American Law Institute, which work as the NCCUSL's partners in creating the Uniform Commercial Code, both gave UCITA a thumbs down.

At this point, UCITA's reputation is so bad, and its foes are so determined, that UCITA will never become law in most states. And since that was the whole idea behind UCITA — to have a uniform state law for software licensing — UCITA now isn't just bad, it's useless.

But at the heart of UCITA, there was once a good, useful idea: software is different from conventional manufactured products, and the laws that cover selling software should treat it differently from other products.

And even though the NCCUSL's commissioners have given up on UCITA, that difference still needs addressing. We still need a law.

Software vendors need the protection and the consistent ground rules that a uniform software licensing law would give them. No, vendors shouldn't be able to sabotage users' machines. But vendors should have reasonable and effective ways of dealing with software

being used illegally.

Software buyers need protections and ground rules as well. Buyers still have to depend far too much on the kindness of vendors when software doesn't work as advertised.

Sure, corporate IT shops can negotiate those things into contracts. But it's a lot easier when safeguards are clearly spelled out in the law.

That's the problem that still remains. And the state law commissioners have taken the first step in solving it by finally pulling the plug on UCITA. That wasn't easy — there was professional pride involved, and the emotions that came from spending more than a decade of effort drafting UCITA and the past four years defending it from attacks by both partners and opponents. But it was the right step to take.

The next step will be even harder.

Soon — not this year, maybe not next year, but soon — the NCCUSL will have to return to the subject of software licensing.

Not to try again with UCITA. But to start over on a new uniform software licensing law.

It shouldn't take so long this time. The commissioners will still have all the knowledge they gained working on UCITA, and all the feedback they've gotten since, and another half-decade's perspective.

They'll have a good chance to make a much better law, one that individual users, corporate IT shops and software makers can accept, and one that law groups and legislatures can support.

I hope they do. Because we need that better law. And when we get the software licensing law we need, we'll all win. ■



FRANK HAYES, *Computerworld's* senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

The Rules of the Game

This pilot fish long ago gave up calling the not-very-helpful help desk when servers go down. But when the server he needs has been unavailable for more than an hour, he calls a buddy in the server room. "Yeah, we know it's been down for 73 minutes," his friend says. "All we have to do is reboot it, but the new outsourcing agreement says we can't touch it until a user calls and opens a trouble ticket. We've been taking bets on how long it would take."

You're Welcome
Support pilot fish gets tired of complaints from

SHARK TANK

Excel spreadsheet that includes his staff's salaries, ratings and last

one office whose PCs are all five years old. Fish manages to get them all upgraded at once — which gets rid of the weird errors and downtime. He's proud of his efforts, but now there's a new problem. "It seems they don't like the computers because they're all black, and the users say they look very unprofessional," grumbles fish. "I wonder if they'd like pink."

merit raises. But fish notices some hidden rows, so he "unhides" them. "I was greeted by the same information for the entire division, from senior VPs down to the tape operators," says fish. After he shows the HR rep the problem, she turns bright red and asks him to delete the e-mail. "I did so," fish says, "after saving the file elsewhere — just to cover my bases, you know."

Raising the Bar

IT shop at this manufacturer generates bar codes for different departments, and though no two formats are alike, they all get done — until one manager's sample bar code stumps this pilot fish. "Even our best scanner beeped back an error on the sample," fish says. So he calls the manager — who admits he created it with a drawing program. "We don't really use bar codes," he tells fish. "We just thought it would look really professional."

Out of Sight . . .

Fledgling HR rep e-mails IT manager pilot fish an

Lookin' Good

Pilot fish is fed up with executives who say they need the latest technology, so he comes up with a new system. "Every six months, we have execs turn in their laptops for a technology refresh," he says. "Their laptop cases and keyboards are cleaned and fitted with new, upgraded OEM stickers. They love their refreshed laptops, and never catch on that all they get are new stickers. And of course this frees up considerable budget for users who actually do need the power but who are too far down the food chain to actually get it."

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 Maryfran Johnson, Editor in Chief, Computerworld
 9:00am to 9:45am **The User Experience: An In-Depth Case Study**
 9:45am to 10:15am **Information Evolution: The 5 Stages of Business Intelligence**
 Jim Davis, SVP, SAS Institute
 10:15am to 10:45am Refreshment and Networking Break
 10:45am to 11:45am **High-Impact Strategies for Delivering Business Intelligence Results**
 Panel Discussion moderated by Julia King, National Correspondent, Computerworld
 11:45am to 12:15pm **Thriving in Times of Transition: One CIO's Perspective**
 12:15pm to 1:00pm Networking Luncheon
 1:00pm to 1:30pm **Building Innovation into a Business Intelligence Infrastructure**
 Shaku Atre, author of Business Intelligence Roadmap and President, Atre Group
 1:30pm to 2:00pm **Regulated IT: Uncle Sam Wants Your Data**
 2:00pm to 3:00pm **Turning a Legal Eye on IT Governance**
 Panel Discussion moderated by Tom Hoffman, Computerworld Reporter
 3:00pm Program concludes

San Francisco • September 25, 2003

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 8:30am to 9:00am **Turning Information into Insight: The Changing Role of Business Intelligence in the Enterprise**
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 9:00am to 9:45am **The User Experience: An In-Depth Case Study**
 9:45am to 10:15am **Thriving in Times of Transition: One CIO's Perspective**
 Doug Busch, CIO, Intel
 10:15am to 10:45am Refreshment and Networking Break
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 1:30pm to 2:30pm **Turning a Legal Eye on IT Governance**
 Panel Discussion moderated by Tom Hoffman, Computerworld Reporter
 2:30pm to 3:00pm Thornton May, IT Futurist and Computerworld Columnist
 3:00pm Program concludes

Selected speakers include:



Maryfran Johnson
Editor in Chief
Computerworld



Shaku Atre
Author
Business Intelligence Roadmap



Thornton May
IT Futurist

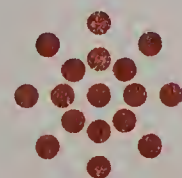


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